ST ENGINEERING
BRARY

June 13, 1949

STEEL

JUN 11 1949

The Magazine of Metalworking and Metalproducing

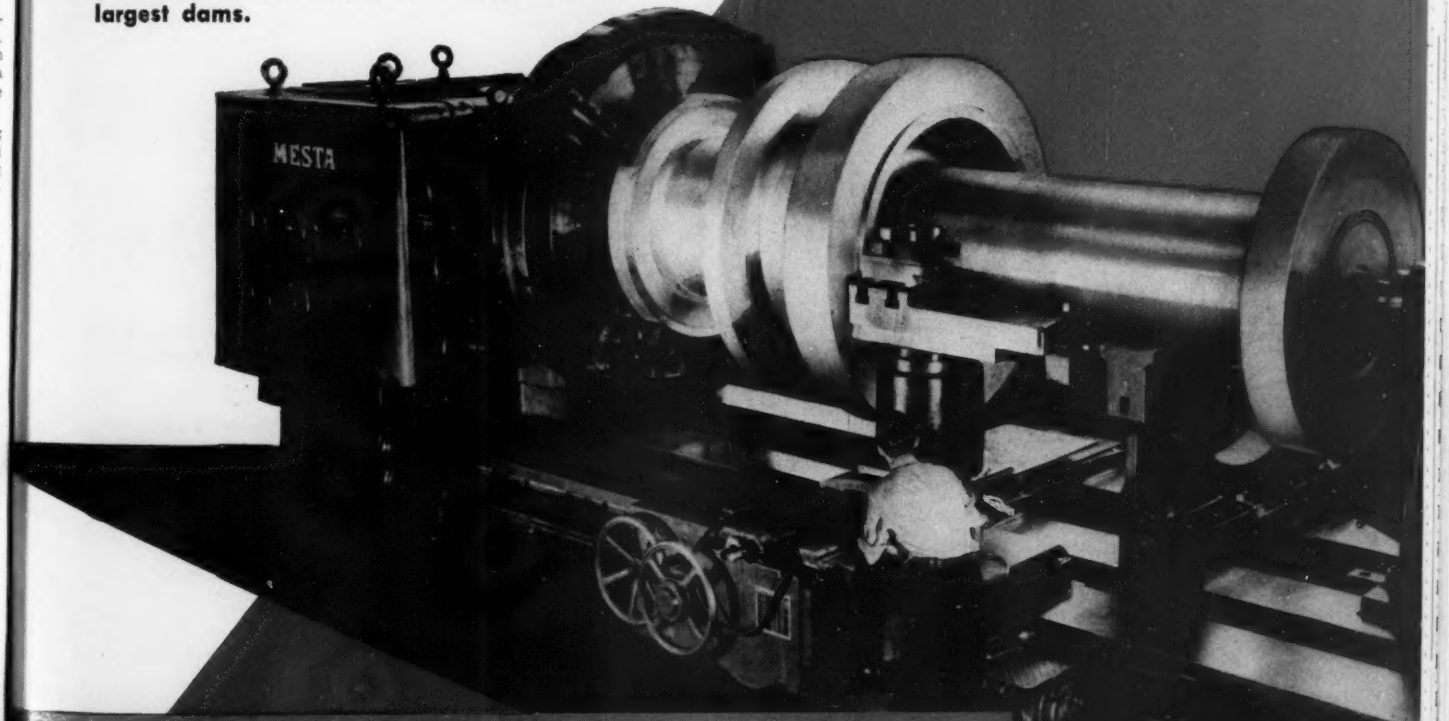
CONTENTS — PAGE 43

MESTA

forgings

Mesta Forgings include massive crankshafts, marine parts, rotor shafts, rolls and pinions, pressure vessels, pump blocks, table rollers, and many others.

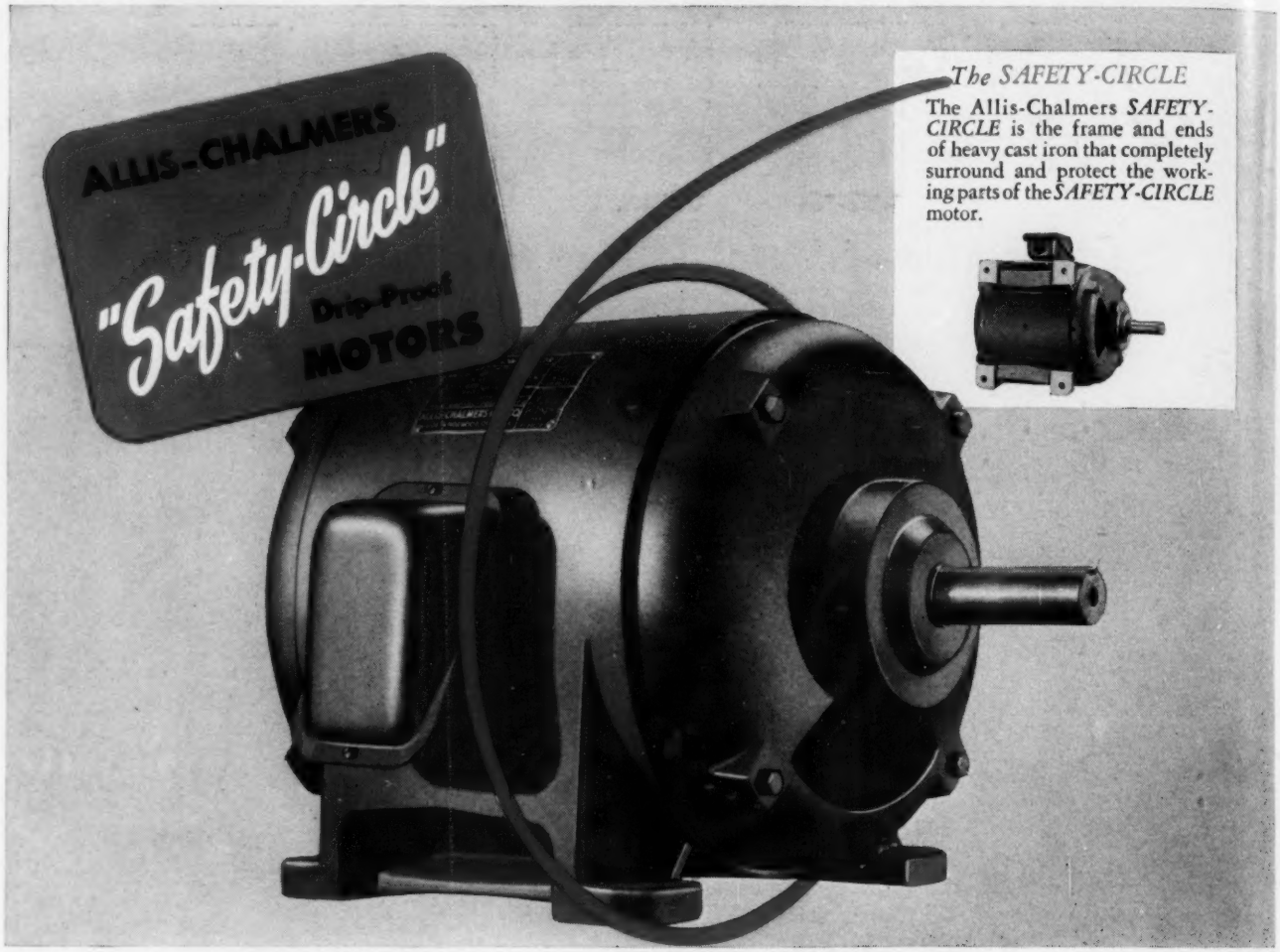
The massive rotor shaft shown, forged from ingot poured in the Mesta Open Hearth Department, is being turned for a turbine driven generator installation at one of the world's largest dams.



DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

MESTA MACHINE COMPANY

PITTSBURGH, PA.



The SAFETY-CIRCLE

The Allis-Chalmers *SAFETY-CIRCLE* is the frame and ends of heavy cast iron that completely surround and protect the working parts of the *SAFETY-CIRCLE* motor.

SAFETY-CIRCLE means

★ All-Around Protection ★ Low Maintenance ★ Dependable Performance

A-2690

THE *SAFETY-CIRCLE* MOTOR is protected all around against those four great motor killers — corrosion . . . distortion . . . friction . . . foreign matter. The frame is of cast iron, the most corrosion-resistant material for this purpose.

The strength and stiffness of the cast iron is supplemented by ribbing and bracing to maintain alignment and prevent distortion. Ball bearings are lubricated and sealed at the factory. They require no attention for years. End brackets are drip-proof at no premium.

SAFETY-CIRCLE motors are fully protected inside, too. Multiple-dipped and multiple-baked stator plus extra inter-phase insulation provide extra protection against electrical breakdown.

With *SAFETY-CIRCLE* protection outside and protected working parts inside, you can count on years of trouble-free, low cost power.

For complete details on *SAFETY-CIRCLE* advantages, see your A-C Authorized Dealer or Sales Office or write for Bulletin 51B6210B. Stocked in sizes 1 to 20 hp. *SAFETY-CIRCLE*, *Texrope* and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS, 1021A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

PUMPS — Integral motor and coupled types. Sizes and ratings to 2500 GPM.

Begin at the end when you buy industrial fire hose

B.F.Goodrich exclusive end protection makes hose last years longer

ORDINARY fire hose is weakest at the ends—where hose and coupling join, where there is extra stress and strain. That's where ordinary tubes sometimes crack and split, causing blowouts. B.F.Goodrich fire hose, when armored with "end protection" is actually *strongest* in this critical area. End protection is an extra ply of hard cotton cords reinforcing the last 12" of each end.

Resists expansion ring damage — B.F.Goodrich end protection provides an extra cushion of cord fabric for the expansion ring to bite into, when the coupling is applied. No danger of tube being cut.

No coupling blowoffs — The extra thickness of cords that end protection adds between coupling and expansion ring makes a tighter union between hose and coupling. No danger of the coupling blowing off.

No connecting strains — When hose is connected to a standpipe or is uncoupled after a fire, a strain is put on it in the coupling area as it is twisted to make a connection. End-protected hose stands these extra stresses.

Stands right-angle bends—When the standpipe points upward, so that the hose connection must make a right-angle bend, end protection keeps the tube from splitting or cracking under the strain.

Other features: End protection can be specified with most types and sizes of industrial fire hose. See this money-saving feature, along with other quality features of B.F.Goodrich fire hose such as, flat cure, Hydroseal treatment to prevent mildew, Koroseal swivel gaskets that couple by hand and prevent locking. Ask your local distributor, or write: *The B.F.Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Koroseal—Trade Mark Reg. U. S. Pat. Off.

B.F.Goodrich
RUBBER FOR INDUSTRY

Behind the Scenes...

We Read About Us

We don't know Mr. George Kinter, of Pittsburgh, but we are happy to note that he has raised us to the standing of an authority. At least, we've been quoted! Byron Snell, who knows more about what's going on in the Smoky City than practically anybody else, sends us a clipping quoting this column, no less. And it also appears that we have some readers out West, too, because after we printed that item about Editor Pinky Such not having received a ten-gallon hat, one suddenly appeared in the mail from President Carl Meyers of C. F. & I. He looks real cute in it, too!

Back Half a Century

Fifty years ago our editors were berating the pig iron market for going higher when they had confidently predicted the ceiling on iron had been reached. Explosive words were used in describing the impossible condition of the market, where prices have become meaningless, just a figment of the transactions. Nevertheless, inflation continued to grind on inexorably, with wages increased to $1.72½ per day for laborers and $5 per day for iron puddlers, the then-kings of the labor market. Those weren't eight hour days, either!

A Capital Story

Ed Kreutzberg, Washington Editor, has sent us this story:

"When STEEL established its Washington office in the Blair House in 1926 it leased the space in the usual way from the Blair estate and it is only now that the move becomes interesting when viewed in retrospect. For STEEL'S former office, a large front room on the second floor, with a full view up and down Pennsylvania avenue, with a big old-fashioned fireplace, today is the coziest room in the 'temporary White House' occupied by the Truman family while the real White House is undergoing major repairs.

"This observation comes to mind with the recent passing of Lynne M. Lamm, for many years head of STEEL'S Washington bureau. Lynne came with STEEL in 1926 from the *Washington Post* which he had served as day city editor. It was on his motion that the Blair House quarters were selected; he had only to cross the street to attend President Coolidge's press conferences, and the location was handy in general. That was important to Lynne for he operated on a split-second schedule; for example, if, because of some unavoidable delay, he arrived at the office as little as 1 minute after 8 in the morning, his day started under a handicap. Lynne was one of the most conscientious editors ever associated with STEEL. One time he remarked that he never had time for 'window-shopping' in Washington as it took his mind off his work. But the result was consistent good Washington coverage for STEEL'S readers. He maintained an exacting schedule until ill health forced his retirement in November of 1946. He died on May 14, aged 59.

"To finish up with reference to the Blair House, that famous old mansion was bought by the government in 1942. But by then STEEL had long been gone from it. STEEL moved into the National Press Building on its completion in October of 1927, thus being one of the charter tenants. It has maintained its Washington headquarters there ever since."

Walt Is A Handler

A few orchids are in order for Associate editor Walt Toerge for his excellent series on materials handling, now winding up. Walt knew a lot about materials handling before he started his researches preparatory to writing this stint. Now he knows so much more that he practically qualifies as an expert. We have a few tearsheets of the entire series available, so if you would like an extra one, say the word.

Puzzle Corner

We are not sure whether it is the hot weather or whether our puzzles are getting a little too rough for you mathematicians in our audience, but for the first time we failed to get a single answer to our puzzle of two weeks ago. It was the escalator problem, and the answer is that the escalator was 42 steps long. Here's a more simple one for summertime solving. A tennis tournament is set up in a club, with 78 players entered. The committee wants to schedule these matches so as to complete the play and name a champion in a week's time. How many matches per day must be played?

Shrdlu

(Editorial Index—page 43)

STEEL

Vol. 124—No. 24 June 13, 1949

BUSINESS STAFF

GEORGE O. HAYS
Business Manager

ADVERTISING

R. C. JAENKE
Advertising Manager

C. H. BAILEY
Service Manager

A. V. ANDERSON
Production Manager

New York:
E. W. KREUTZBERG, K. A. ZOLLNER
CALVIN FISHER, JR.

Pittsburgh:
S. H. JASPER, B. C. SNELL

Chicago:
L. C. PELOTT, V. G. BRETTMAN

Cleveland:
D. C. KIEFER, H. G. ROWLAND
W. L. POLAND

Los Angeles:
F. J. FULLER

•

CIRCULATION AND MARKET RESEARCH

J. W. ZUBER
Director

R. L. HARTFORD
Research Manager

H. E. METZNER
Circulation

G. R. EBERSOLE
Mail & List Service

Field Representatives:
C. A. PRICE, H. R. DUNNE, D. G. HEWITT
E. W. SCHEINERT

•

MAIN OFFICE

Penton Building, Cleveland 13, Ohio
Main 8260

BRANCH OFFICES

New York 17 .....16 East 43rd St.
Murray Hill 2-2581

Chicago 11.....520 North Michigan Ave.
Whitehall 4-1234

Pittsburgh 19 .....2806 Koppers Bldg.
Atlantic 3211

Los Angeles 4 130 N. New Hampshire Ave.
Fairfax 1758

London: 2 Caxton St., Westminster, S.W.1

• • •

Published by THE PENTON PUBLISHING Co., Penton Building, Cleveland 13, Ohio, E. L. SHANER, Chairman and Treasurer; G. O. HAYS, President; R. C. JAENKE, Vice President; F. G. STEINEBACH, Vice President and Secretary; E. L. WERNER, Assistant Treasurer. Member, Audit Bureau of Circulations; Controlled Circulation Audit, Inc.; and National Publishers' Association.

Published every Monday. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $18. Single copies (current issues) 35c. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879. Copyright 1949 by the Penton Publishing Co.

Editorial Staff on Contents Page

ABC CCA

EDITORIAL STAFF

E. L. SHANER
Editor-in-Chief

IRWIN H. SUCH
Editor

WM. M. ROONEY
News and Market Editor

JAY DEEULIS
Engineering Editor

J. D. KNOX
Steel Plant Editor

GUY HUBBARD
Machine Tool Editor

DON S. CADOT
Art Editor

ALLEN G. GRAY
Consulting Editor

ASSOCIATE EDITORS

W. J. CAMPBELL • FRANK R. BRIGGS
VANCE BELL • WALTER F. TOERGE
DAN REEBEL

ASSISTANT EDITORS

HENRY J. HOLTZ • DOLORES K. BLAHA
JOHN S. MORGAN • L. J. SKUDERIN
EDWIN L. KARPICK • M. T. BORGERHOFF

RESIDENT EDITORS

E. C. KREUTZBERG
Washington Editor

B. K. PRICE
Eastern Editor, New York

L. E. BROWNE
Associate Editor, New York, Boston

J. C. SULLIVAN
Pittsburgh Editor

A. H. ALLEN
Detroit Editor

E. F. ROSS
Chicago Engineering Editor

HOWARD C. TUTTLE
Chicago News and Market Editor

VINCENT DELPORT
European Editor, London

EDITORIAL CORRESPONDENTS

R. W. KINCEY, *Birmingham*
L. C. FELDMANN, *Buffalo*
SAMUEL S. CARR, *Cincinnati*
MAC L. HUTCHENS, *St. Louis*
GEORGE R. REISS, *Youngstown*
BERT D. LYNN, *Los Angeles*
ROBERT BOTTORFF, *San Francisco*
R. C. HILL, *Seattle*
C. K. CATES, *Dallas*
F. S. TOBIN, *Toronto*
J. A. HORTON, *Birmingham, Eng.*
LEON JAUDOIN, *Paris, France*
JACQUES FOULON, *Liege, Belgium*
HERBERT GROSS, *Dusseldorf, Germany*

MAIN OFFICE

Penton Building, Cleveland 13, Ohio
Main 8260

BRANCH OFFICES

New York 17 ..... 16 East 43rd St.
Murray Hill 2-2581

Chicago 11 ..... 520 North Michigan Ave.
Whitehall 4-1234

Pittsburgh 19 ..... 2806 Koppers Bldg.
Atlantic 3211

Detroit 2 ..... 6560 Cass Ave.
Madison 3024

Washington 4 ... 1123 National Press Bldg.
Executive 6849

Los Angeles 28 ..... 1452 N. Seward St.
Hudson 2-4439

London .. 2 Caxton St., Westminster, S.W.1

Business Staff on Page 4

NEXT WEEK . . .

Recent Developments in Titanium and Titanium Alloys

Centrifugal Casting Welding Rods

Production of Hot and Cold Rolled Strip and Sheet—III

Instrumentation for Control Of Tin Plate Production

STEEL

The Magazine of Metalworking and Metalproducing

VOL. 124, NO. 24 JUNE 13, 1949

NEWS

★ As the Editor Views the News 45
★ News Summary 49
Unions Start Big Wage Push 51
Iron Ore Needs Reappraised 53
Freight Absorption Bill To Be Acted Upon by House 54
Allocations Needs Fade 55
Air Force Utilizing Machine Tool Reserve 56
Efficient Material Handling Seen as Cost-Reduction Essential 56
Gearmakers Told To Expect Upturn in Autumn 57
★ Windows of Washington 58
Europe Studies Production Costs 61
Portsmouth Steel Spends $12 Million on Improvements Since 1946 62
★ Calendar of Meetings 63
★ Mirrors of Motordom 65
Johns-Manville Center Makes Possible Large-Scale Research 68
★ Briefs 69
★ The Business Trend 70
★ Men of Industry 72
★ Obituaries 77
★ Construction and Enterprise 156

TECHNICAL

★ Engineering News at a Glance 79
Flexibility of Sheet Metal Operations in Tractor Manufacture 80
Efficient Handling Methods Can Cut Production Costs—VI 84
Production of Hot and Cold Rolled Strip and Sheets—II 88
Arc Welded Design Used Advantageously on Farm Implements 101
Vapor Blasting Precision Parts 104
★ Progress in Steelmaking—Hot Rolled Breakdowns Made at Geneva 106
Converted Industrial Truck Fleet Solves Handling Problems 111
Five Crane Travel Motions Speed Handling of Coiled Rod, Wire 112
Hot Wire Drawing Process Gives Good Physical Properties 116
"Automatic Washer" Speeds Cleaning of Gear Racks 122
★ New Products and Equipment 125
★ Helpful Literature 131

MARKETS

★ Market Summary 133
★ Market Prices and Composites 134
Cut Metal Prices To Spur Sales 138

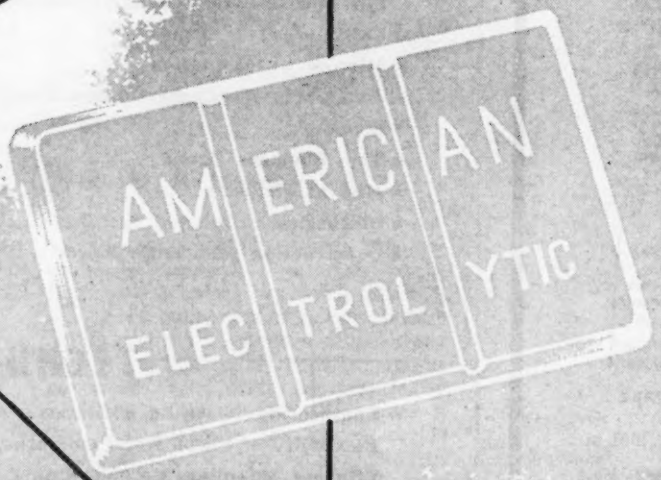
★ *Advertising Index* 164

Editorial Index available semiannually; STEEL also is indexed regularly by Engineering Index Inc., 29 West 39th St., New York 18

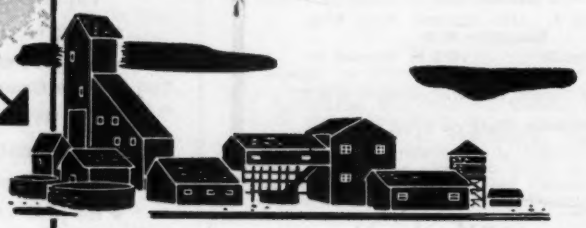
★ Denotes Regular Features.

American Electrolytic

99.99+% slab zinc



a reliable source for die casting requirements



AMERICAN ZINC SALES CO., Distributors

for AMERICAN ZINC, LEAD & SMELTING CO.

COLUMBUS, OHIO
CHICAGO
ST. LOUIS
NEW YORK

June 13, 1949

Don't Rock the Boat!

Discussion of business weather has been given a prominent spot on the programs of most conventions of the current season. The average industrial executive is eager to compare notes with his contemporaries in order to determine how the experience of his own company compares with that of the majority in his industry.

It may be significant that in convention after convention the talk about the present business situation has conformed rather closely to a common pattern. Discussion at the annual meetings of the American Gear Manufacturers' Association at Hot Springs and of the Material Handling Institute at Asheville is typical.

In these and other meetings, speakers have presented statistics showing the downward trend in their respective industries and have considered factors which are likely to affect the trend in the future. In almost every instance, the commentators express the opinion that the recession will not be severe or of long duration. They point to various factors, such as volume of potential purchasing power, financial condition of industry and other economic cushions, which should prevent this recession from developing into anything like the depressions of 1920 and 1932. In fact, a number of speakers have advanced plausible reasons why the present downward trend can be expected to be reversed shortly before or after the end of 1949.

However, these somewhat reassuring predictions are based on the assumption that nobody will inflict new deflationary pressures upon the economy. If the President should persist in his demand for higher taxes now, or for the Brannan farm support plan, or for any scheme to subsidize industrial expansion, it would delay the upturn. Too much insistence on the part of unions for too great an increase in wages or benefits will prolong the recession. Also, if management were to respond too freely to the pressure of union demands at the expense of its obligations to its customers, the result would be disastrous.

In short, we are in a period of adjustment to a more stable economy. This adjustment can be healthy and it need not be too severe nor too long, provided that all important elements of our society refrain from promoting new deflationary movements. A little good teamwork now will pay handsome dividends.

* * *

PRICED OUT OF WORK?: Negotiations on new union contracts affecting hundreds of thousands of employees in scores of companies are scheduled during the next few weeks.

United Mine Workers, which has been discussing terms with Southern coal operators for several weeks, on June 13 will begin talks with United States Steel Corp. On June 14 General Electric Co. and United Electrical, Radio & Machine Workers will start negotiations. United Steelworkers and United States Steel Corp. are to get together June 15. United Automobile Workers, whose representatives were busy at the bargaining table with Ford Motor Co. last week, will seek conferences with Chrysler Corp. after June 16. Westinghouse Electric Corp. and UE are scheduled to discuss contract terms June 23. Talks between unions and numerous other companies have already begun or will start before the end of June.

In most cases the unions are asking for wage increases of about 15 cents an hour, pensions of $100 to $150 per month, comprehensive social insurance programs and improved vacation benefits, shift differentials and seniority.

In view of the economic uncertainty of the

(OVER)

moment, it is surprising that the unions should ask for such large increases. Few employers are in a position to assume the additional burden which granting of these demands, even in part, would entail. But even assuming that employers were willing to grant them, the immediate result would be a sharper cutback in employment than now prevails. Tens of thousands of employees would be priced out of work.

—pp. 51, 52

* * *

SIGNS OF THE TIMES: Economic uncertainties are responsible for numerous revisions of plans in all phases of activity in the metalworking industries.

Operations in the iron ore mines of Minnesota begin to reflect the slackening demand for steel. Underground ore mines in that state have reduced the work week from six to five days. Open-pit mines continue on their normal five-day week. If ore consumption continues to lag, lake vessel operators may close the shipping season earlier this year and open it later next spring.

The recession also is reflected in conventions and shows. A survey by the Exhibitors Advisory Council shows that 29 per cent of 800 manufacturers reporting say they will participate in fewer exhibits in 1949 than in 1948. A material handling show, tentatively scheduled for 1950, has been postponed until 1951.

—pp. 53, 56, 63

* * *

ROLLING SHEETS, STRIP: One of the most interesting chapters in this publication's series on the fundamentals of steelmaking is that dealing with the production of hot and cold-rolled strip and sheets, the second installment of which appears in this issue.

Readers are fortunate in that the author is Charles L. McGranahan, assistant general superintendent of the Pittsburgh works of Jones & Laughlin Steel Corp. He is widely recognized as one of the nation's leading authorities on strip and sheet steel. Those who read his initial article in last week's issue and who noted how clearly he explains the details of the manufacture of these important steel mill products will want to read the succeeding installments.

In the current issue, Mr. McGranahan describes every step in the passage of a slab through the scale breaker, roughing stands, finishing stands, run-out tables, coilers, pilers and other units of a modern continuous hot-strip mill. The text, with processing chart and numerous illustrations, affords a clear insight into this highly refined rolling mill procedure.

—p. 88

* * *

THINK BILL WILL HELP: Although the O'Mahoney bill still awaits action by the House, sellers and buyers of steel are beginning to comment cautiously upon how it will affect the distribution of steel if it becomes law.

Initial reaction is largely favorable. The president of one midwestern steel producer says his company will return to the basing point system if it is legalized. Other spokesmen believe that the bill, if enacted, will permit sellers and distributors to serve customers in a broader trading area. However, many commentators hold that present high freight rates will prevent freight absorption to the extent it was practiced in prewar days. The law would be particularly helpful at points where production greatly exceeds consumption, as at Pittsburgh and Youngstown. In these instances, the law would encourage sellers to cultivate distant markets.

—p. 54

* * *

INVENTORY IS THE KEY: Price variations of representative ferrous and nonferrous metals during the past year present curious contrasts. Prices of finished steel and aluminum are higher now than they were last June, the price of tin has remained unchanged, and prices of copper, lead and zinc are substantially lower than they were a year ago.

Prices of these last three metals crept up from June, 1948, levels to postwar highs in November. Following a number of minor changes in the first two months of 1949, the prices softened appreciably late in March and have been declining to date. The latest downward adjustments came early this month.

An odd commentary is that the sellers of copper, lead and zinc, offering sharply reduced prices, are just as hard pressed to get orders as are the sellers of steel and aluminum whose prices have not been cut. The significant point is that in the case of all five metals, consumers are holding back until inventories are worked down.

—pp. 133, 138, 139

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

LABOR POT SIMMERS— This is the week the big metalworking unions start their drive for fourth round wage increases, pensions and social insurance programs (p. 51). The steelworkers meet with U. S. Steel June 15 to open negotiations that will influence to a large extent the 1949 wage settlements in the basic steel and fabricating industries. Electrical workers start negotiations June 14 with General Electric. Auto workers are now talking with Ford and will prepare to move in on Chrysler this week. John L. Lewis has pulled his coal miners out of the mines in an attempt to cut down large coal stocks and strengthen his bargaining position. A prolonged coal strike and possibly stoppages in steel and other metalworking industries this summer loom as management indicates it will resist union demands that would substantially increase its labor costs, preclude price reductions, and in many cases price metalworking products out of the market.

BUSINESS WEATHER—Although some bright spots are discernible in the business picture, the trend continues downward (p. 55.) Steel mill operations are edging downward, with blast furnaces, open hearths and other facilities being taken out of production for lack of demand. Unemployment is increasing, contrary to seasonal trends. More price reductions are appearing. The steel allocations program is fading as supply overtakes demand.

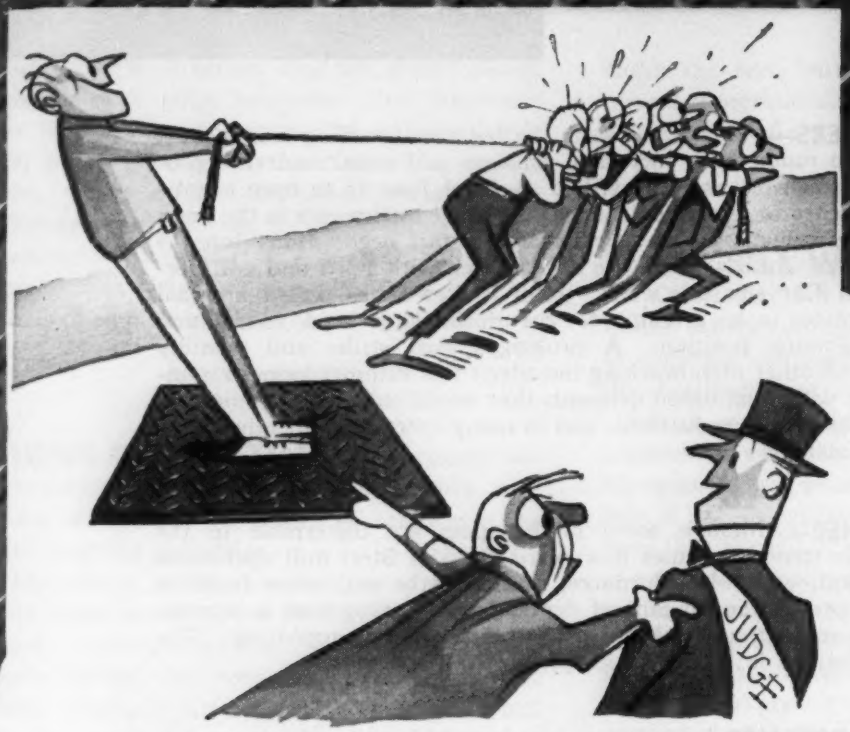
ORE NEEDS REAPPRAISED— Iron ore consumers, shippers and mine operators are studying the decline in iron and steel business and reappraising the needs for ore (p. 53). Underground mines, which operate all year, have trimmed the work-week from six days to five. Further effects of any curtailment in ore needs are not likely to become evident until near the end of the shipping season.

PRICING— The O'Mahoney bill to legalize freight absorption and basing point pricing in the absence of collusion is regarded by heavy industry executives as a step toward clarifying the muddled pricing situation that has prevailed for more than a year (p. 54). Steelmakers believe it will help mills in areas of excess production to tap markets in areas of excess consumption. Widespread return to the basing point system, however, is not anticipated.

BODY REDESIGN— Major auto manufacturers are working their engineers overtime to develop new styles of bodies for next year's cars (p. 65). Chrysler will restyle all four of its lines. Lincoln and Mercury likely will introduce new models before the year ends. General Motors soon will introduce the new Buick Special, has other body modifications in the making.

ANTIDEPRESSION BILL—Omnibus legislation covering federal action to mitigate business depressions is being studied by government officials and some private organizations, prior to being introduced in Congress (p. 58). Fathered by Senator Murray, the bill is a sequel to the Employment Act of 1946, provides for expansion in basic industries where necessary. It contains no provisions for government operation of any business enterprise.

HERE AND THERE IN INDUSTRY—Large-scale research is being undertaken by Johns-Manville Corp. to improve the quality and quantity of its 400 building and industrial products (p. 68). . . . Portsmouth Steel Corp. has expanded and improved its plant facilities in the past three years to the tune of $12 million (p. 62) . . . Materials handling equipment manufacturers expect the continuance of high labor rates will force greater use of efficient handling systems and thereby enable them to capitalize on the recession (p. 56) . . . Gear manufacturers meeting in Hot Springs last week were given encouragement that business will turn upward later this year (p. 57) . . . The Air Force is beginning to utilize its machine tool reserve (p. 56) . . . European metalworking companies are paying more attention to costs than to production gains (p. 61), just like the United States.



INLAND STEEL

"'Tain't fair—he's standing on slip-resistant 4-WAY Safety Plate!"

DESIGNED TO PROVIDE SAFETY UNDERFOOT

In this contest—and in the fight against accidents—the worker with Inland 4-WAY Safety Plate underfoot has a definite advantage. 4-WAY protects by gripping firmly . . . thereby helping to stop costly slips, falls, and lost man hours. Install it wherever feet or wheels must go—in your plant or on your product.

INLAND STEEL CO., 38 S. Dearborn St., Chicago 3, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

Write for Booklet

Stocked by Leading Steel Warehouses

Inland 4-WAY SAFETY PLATE

Reg. U. S. Pat. Off.

STEEL
A PENTON PUBLICATION

Unions Start Big Wage Push

Negotiations begin this week in steel and electrical equipment industries on demands for higher rates, pensions, insurance. Coal miners strike to strengthen bargaining hand

KEY metalworking industries this week will start negotiations with the big CIO unions on demands for fourth round wage increases and social security benefits. The bargaining conferences about to start may prove to be the most important yet held.

Union demands generally will include: 1. Wage increase of about 15 cents an hour; 2. pensions of $100 to $150 a month on retirement at age 60 or 65, all costs to be paid by the companies; 3. comprehensive social insurance programs, covering life, sickness and disability, hospitalization and surgical expense reimbursement for employees and dependents, all to be paid by the companies; 4. an assortment of fringe demands, calling for improved holiday and vacation benefits, shift differentials, seniority changes, etc. The latter demands vary among the several unions.

The union demands total up to a substantial sum. Exact amount is difficult to determine because the costs of pensions and insurance programs vary widely. Rough estimates indicate the total costs of the demands range up to 50 cents an hour.

Industry To Resist—Most metalworking executives take a dim view of the union proposals. They are convinced that further increases in employment costs must be avoided under current business conditions. With business volume on the downtrend and pressure for price reductions increasing, they contend any substantial increase in labor costs would accelerate the slackening in demand and necessitate the furloughing of more employees.

Increases in labor costs no longer can be passed along to the consumer in the form of higher prices. Granting of any substantial part of the union wage and welfare demands, employers point out, would mean pricing their products out of the market.

Strikes May Be Widespread—The unions contend that a wage increase is a "must" and that 1949 is the year to initiate pension and insurance programs. They will argue that industry can afford the increases on the basis of 1948 and first quarter 1949 earnings. They will insist that industry should "depreciate" and "maintain" its workers through pension and insurance programs, just as it depreciates and maintains its equipment.

Union leaders suggest that unless substantial concessions are won in the bargaining conferences strikes will be in order later this summer.

Union attitude is expressed by Philip Murray, president of the CIO and the United Steelworkers: "I think it is the business of the United Steelworkers to press our demands. I am not threatening. I do not say there must be a strike. I sincerely hope not. But I do say that our people are going to get more out of this industry . . . than ever has been accorded before."

New Bargaining Climate—This year's negotiations will start in an economic atmosphere that is radically different from those prevailing in other postwar bargaining conferences. In the three previous years, the accent of industry was on production—sometimes at almost any cost. Today the accent has shifted from production to costs.

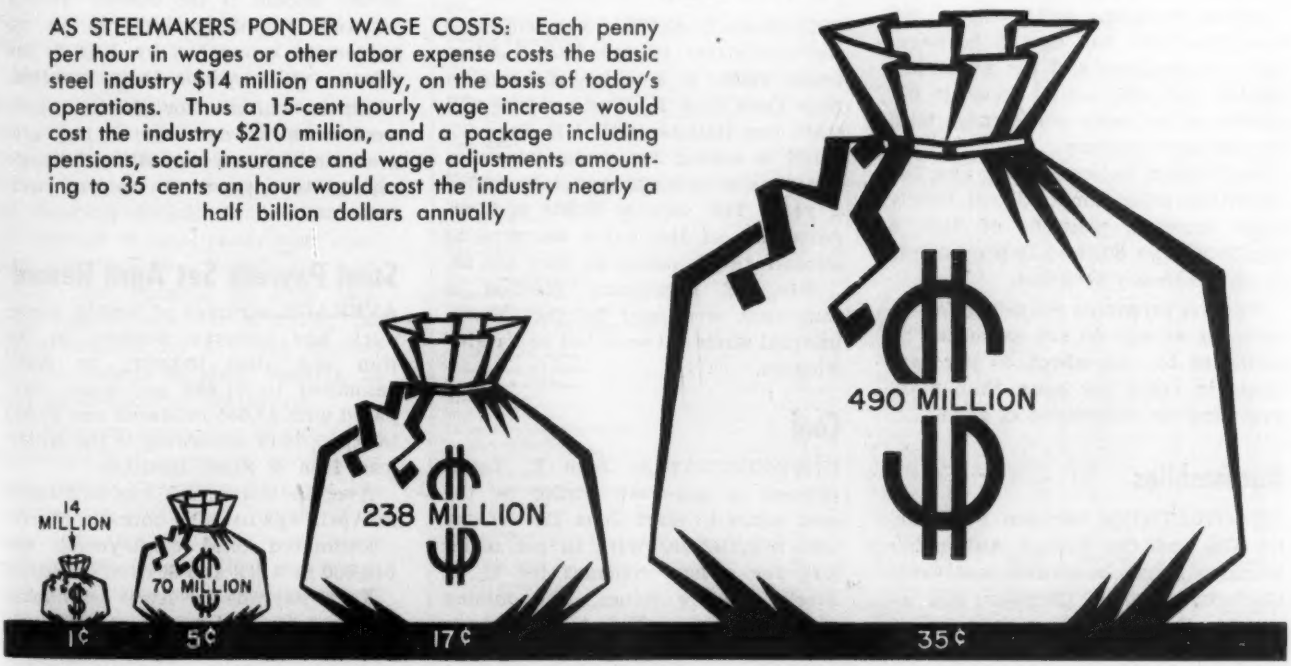
Prices and living costs have reversed their postwar trend and now are edging downward, taking much of the punch out of union arguments for cost-of-living adjustments.

Unemployment is increasing. Workweeks are shorter.

In the face of this deteriorating economic climate, the militancy of the unions in asking large increases is somewhat surprising.

The situation in the leading indus-

AS STEELMAKERS PONDER WAGE COSTS: Each penny per hour in wages or other labor expense costs the basic steel industry $14 million annually, on the basis of today's operations. Thus a 15-cent hourly wage increase would cost the industry $210 million, and a package including pensions, social insurance and wage adjustments amounting to 35 cents an hour would cost the industry nearly a half billion dollars annually



tries may be summarized as follows:

Steel

TOP officials of the United Steelworkers and the United States Steel Corp. will meet in Pittsburgh June 15. Negotiations between the union and Inland Steel Co., Timken Roller Bearing Co., Aluminum Co. of America and some other companies already have been opened. In general, the settlements of these companies will await the agreement between the union and U. S. Steel.

Contract between U. S. Steel and the union provides for negotiation of wage rates and social insurance only. The union is attempting to force negotiations on pensions and argues that the Supreme Court decision of a few weeks ago in the Inland Steel case requires the companies to bargain on pensions. U. S. Steel has reminded the union of the contract restrictions on bargaining subjects and has excluded pensions from this year's negotiations.

The Demands: The United Steelworkers will ask U. S. Steel for: 1. Wage increase of 15 cents an hour; 2. social insurance program, estimated by the union to cost 8.4 cents per hour and by the company to cost about 10 cents an hour; 3. pensions of $150 a month, with retirement on a voluntary basis; 4. union shop; 5. guaranteed minimum weekly wage for each week worked during the life of the contract; 6. time and one-half for all Saturday work, double time for all Sunday work and two and one-half times the straight pay for holiday work; seniority preference to local union officers, grievance committeemen and assistants; 7. sundry other benefits.

Inland Bargains on Pensions—Inland Steel Co. has agreed to negotiate on pensions and the union has spelled out its social security demands in the early conferences with the Chicago company.

At Timken Roller Bearing Co., the union has asked for a 15-cent hourly wage increase, pensions of $150 a month at age 60, and improvements in an insurance program.

Pension programs providing for retirement at age 60 are estimated by actuaries to cost about 50 per cent more, in cents per hour, than plans providing for retirement at age 65.

Automobiles

NEGOTIATIONS between Ford Motor Co. and the United Automobile Workers began in earnest last week. Conferences with Chrysler will be sought after June 16.

Union is asking for $100 a month pensions at age 60 to workers with 25 years of service; a health and security fund to finance illness and accident benefits, hospitalization and life insurance; a wage increase, not disclosed but believed to be around 15 cents an hour.

Ford has rejected these demands.

Philip Murray, left, president of the CIO and the United Steelworkers, and Walter Reuther, right, head of the United Auto Workers, are sparking the drive for higher wages, pensions and social insurance

Electrical Equipment

GENERAL ELECTRIC CO. will meet representatives of the United Electrical, Radio & Machine Workers in New York June 14. Westinghouse will start negotiations with UE June 23.

UE is asking for wage, insurance and pension concessions totaling $500 a year. The various locals and departments of the union are free to allocate the demands as they see fit.

The UE bargaining position is somewhat weakened by the union's internal strife between left and right-wingers.

Coal

UNPREDICTABLE John L. Lewis ordered a one-week strike in the coal mines to start June 13, the day that negotiations were to get under way for a new contract for U. S. Steel's captive mines. The mining stoppage was called to cut down stocks of coal above ground and thus strengthen the United Mine Workers bargaining position.

Coal stocks on May 1 totaled 65 million tons, equal to 52 days' supply. Steel mills had 49 days' supply. Excess of production over consumption during May and the first two weeks of June have further increased coal stocks.

Soft coal contracts expire June 30, in the middle of the miners' 10-day vacation beginning June 25. If no agreement is reached by July 5, the miners will continue their vacation.

Miners will ask for shorter work-week with no decrease in pay and a substantial increase in the tonnage royalty to support the miners' welfare fund.

Steel Payrolls Set April Record

AVERAGE earnings of hourly, piecework and tonnage workers in the iron and steel industry in April amounted to $1.688 per hour, compared with $1.685 in March and $1.551 in April, 1948, according to the American Iron & Steel Institute.

Average work-week was 38.5 hours in April, against 40.6 hours in March.

Estimated total employment was 646,600 in April and 651,700 in March.

Total payrolls for April established a record for that month at $191,886,000.

Ore Needs Reappraised

Revision in ore shipping schedules possible in line with declining steel demand

THE NATION'S iron ore requirements for this year are being reappraised in light of declining business in the iron and steel industry. The reviews are under way in the offices of consumers and producers alike.

While leading producers say consumers have not formally given notice of a limitation on ore purchases this season, buyers are carefully studying their needs, and this in turn has alerted sellers to review their schedules in an effort to keep them in line with requirements. Consumers may defer definite decisions on their needs until they know whether strikes develop in the coal and steel industries.

Under Contract—The season's iron ore prices and shipments are covered by contracts, most of which specify the minimum and maximum tonnages a consumer can have. Further and substantial decline in demand for iron and steel may inspire ore users to limit their take much closer to the minimum than has been the case since 1939. During and since the war years, consumers have been more interested in getting maximum tonnage under their contracts.

One of the first steps to trim ore mining into line with anticipated demand has been the reduction of the work week from six to five days in underground ore mines. These operate the year around, ore being stockpiled during winter in readiness for summer shipment. The five-day week is customary in the open pit ore operations.

Not Felt Immediately—Any reduction in ore shipments this year would not affect Great Lakes vessel movement immediately. It would be reflected only in an earlier closing of the shipping season. Since 1939, the ore carriers in most cases have operated into December despite the difficulties and hazards of such late-season operations. In addition, the heavy demand for ore has spurred the ore vessels to start running as early as possible in the spring.

Smaller ore carryover at the year-end would hold inventory investment down and at the same time put the consumer in position to benefit from price reductions if such were made next season. In the last ten years consumers have been concerned lest they might not have enough ore on hand at the yearend to last until the Great Lakes shipping season opened. It was nip and tuck one spring but there was no severe hardship.

This year, consumption of Lake Superior iron ore and shipments from upper lake ports have been running ahead of the corresponding period of 1948. In the first four months of 1949, consumption totaled 29,639,512 gross tons, compared with 25,107,565 tons in the like period of last year. Through June 5, this year's shipments from upper lake ports totaled 23,022,677 gross tons, compared with 21,223,116 tons in the corresponding period of 1948.

Total shipments of Lake Superior iron ore in 1948 were 84,693,010 gross tons.

Rich Iron Ore Find Reported

THE Dominican Republic Information Center, New York, reports rich deposits of iron ore have been found in Duarte Province in the northeastern part of the Dominican Republic.

The deposits are estimated to hold 43 million tons of ore of 67 per cent iron content, the center states, and an American steel company is exploring the deposit.

The Dominican Republic would like to assure itself of an adequate supply of steel and iron for domestic use and would like to have these supplies produced at home. Government opinion leans heavily toward establishment of a domestic industry in cooperation with private interests.

Coal suitable for smelter use is reported present near the iron ore deposits.

Steel Shipments Decline

SHIPMENTS of steel products declined during April to 5,596,786 tons from the all-time record high of 6,305,681 tons recorded in March, according to the American Iron & Steel Institute, New York.

They showed a moderate gain over April, 1948, when shipments totaled 5,096,161 tons. In addition to these shipments, 512,941 tons were forwarded to members of the industry in April for conversion into further finished products or for resale.

Net shipments for the first four months of this year totaled 23,216,745 tons, an increase of 1,773,172 tons or about 8 per cent over the total of 21,443,573 tons for the 1948 period.

The decline in shipments last month compared with those in March were substantial in semifinished forms, the totals amounting to 222,560 tons against 308,120 tons, respectively; in cold-finished bars, 127,299 tons against 160,019 tons; drawn wire, 172,325 tons against 238,872 tons; electrolytic tin plate, 147,311 tons against 173,732 tons; and cold-rolled strip, 144,192 tons against 170,370.

STEEL PRODUCT SHIPMENTS FOR APRIL, YEAR TO DATE

Steel Products	Number of Shippers	Item	April - 1949: Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	April - 1949: Per cent of Total Shipments	April - 1949: Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)	To Date This Year: Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	To Date This Year: Per cent of Total Shipments	To Date This Year: Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)
Ingots, blooms, slabs, billets, tube rounds, sheet and tin bars, etc.	47	1	222,560	4.0	217,557	1,149,507	5.0	1,052,179
Skelp	5	2	8,407	0.1	40,944	31,168	0.1	161,819
Wire rods	19	3	51,123	0.9	21,315	216,661	0.9	99,192
Structural shapes (heavy)	11	4	374,594	6.7	3,352	1,485,883	6.4	11,473
Steel piling	3	5	34,047	0.6	43	113,567	0.5	992
Plates	28	6	619,482	11.1	22,193	* 2,517,453	10.8	95,779
Rails—Standard (over 60 lbs.)	4	7	186,682	3.3	255	706,828	3.0	3,651
Rails—All other	5	8	12,603	0.2	502	59,323	0.3	1,014
Joint bars	7	9	10,657	0.2	4,596	45,797	0.2	14,115
Tie plates	6	10	40,956	0.7	-	157,265	0.7	41
Track spikes	8	11	9,740	0.2	-	44,703	0.2	35
Wheels (rolled or forged)	5	12	31,654	0.5	127	120,964	0.5	416
Axles	5	13	20,374	0.4	7	81,471	0.4	14
Hot rolled bars (including light shapes)	32	14	576,678	12.1	72,377	* 2,786,022	12.0	* 284,200
Hot rolled bars—Reinforcing	24	15	140,736	2.5	481	559,242	2.4	1,775
Cold finished bars	35	16	127,299	2.3	315	567,944	2.4	3,643
Tool steel bars	17	17	5,684	0.1	98	24,999	0.1	391
Pipe—Standard	15	18	205,226	3.7	5,443	789,035	3.4	20,227
Pipe—Line	12	19	204,084	3.6	1,766	800,658	3.5	8,371
Pipe—Oil country goods	14	20	120,488	2.2	7,417	524,181	2.3	32,864
Tubes—Boiler	5	21	12,358	0.2	875	43,733	0.2	4,228
Tubes—Mechanical and pressure	21	22	67,592	1.2	1,647	291,574	1.3	8,009
Miscellaneous pipe (including conduit)	12	23	24,829	0.4	52	101,454	0.4	846
Wire—Drawn	37	24	172,325	3.1	13,229	867,243	3.7	55,538
Wire—Nails and staples	17	25	73,704	1.3	1,037	305,020	1.3	4,633
Wire—Barbed and twisted	14	26	23,711	0.4	6	95,292	0.4	30
Wire—Woven wire fence	12	27	40,749	0.7	240	151,486	0.7	1,112
Wire—Bale ties	11	28	3,158	0.1	-	18,831	0.1	-
Black plate	10	29	42,899	0.8	125	238,476	1.0	168
Tin and terne plate—Hot dipped	9	30	147,556	2.6	-	589,018	2.5	10
Tin plate—Electrolytic	10	31	147,311	2.6	-	637,459	2.8	42
Sheets—Hot rolled	28	32	625,219	11.2	64,866	2,547,582	11.0	258,725
Sheets—Cold rolled	16	33	604,649	10.8	2,860	2,411,201	10.4	8,172
Sheets—Galvanized	15	34	143,170	2.6	26	568,787	2.5	281
Sheets—Long terne	8	35	13,365	0.2	5	52,713	0.2	353
Sheets—Enameling	7	36	16,594	0.3	339	78,633	0.3	740
Sheets—Electrical	11	37	33,720	0.6	-	166,394	0.7	-
Strip—Hot rolled	22	38	155,250	2.8	26,897	624,892	2.7	111,406
Strip—Cold rolled	34	39	144,192	2.6	1,959	630,524	2.7	8,486
All other	4	40	661	-	-	4,752	-	-
Total steel products	138	41	5,596,786	100.0	512,941	*23,216,745	100.0	*2,254,947

* Adjusted.

Freight Absorption Bill

To be acted upon by House. Reaction generally favorable throughout industry

WHETHER the O'Mahoney bill is the answer to the pricing problem facing industry since the Supreme Court ruled against basing point and similar pricing over a year ago remains to be seen. The proposed law, however, appears to come closer to clarifying the situation than anything previously suggested, in the opinion of many competent observers.

Immediate reaction in the steel industry to Senate approval has been generally favorable. Steelmakers, however, are inclined to withhold comment pending House action. When this will come is uncertain, though prompt passage is indicated. The House Judiciary subcommittee held public hearings last week with the aim of reporting the bill speedily.

May Delete Amendments—At the hearings, examination of two witnesses indicated the subcommittee probably will delete two amendments by Senator Kefauver which permit freight absorption "to meet the equally low price of a competitor in good faith (except where the effect of such absorption of freight will be to substantially lessen competition)" and, "that a seller may justify a discrimination (other than a discrimination which will substantially lessen competition) by showing that his lower price or the furnishing of services or facilities to any purchaser or purchasers was made in good faith to meet an equally low price of a competitor or the services or facilities furnished by a competitor."

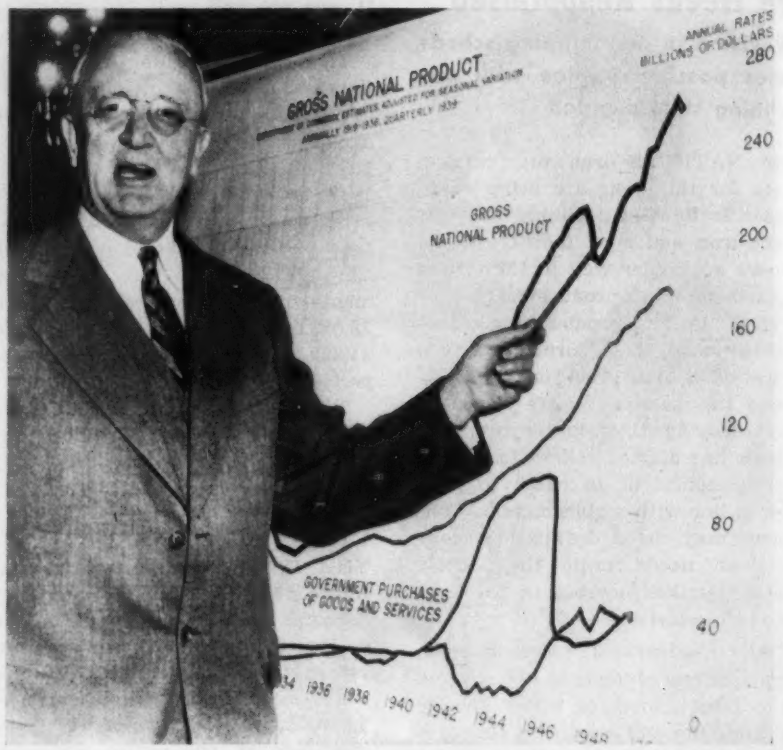
The subcommittee seemed to agree with Senator O'Mahoney that it never was the intention of the antitrust laws to protect anybody against loss in competition, and also with Assistant Attorney General Bergson when he said these parenthetical phrases would eliminate the defense that acts of freight absorption or price discrimination were undertaken in good faith to meet competition.

Add to Section—The subcommittee also indicated it will add to the end of section 3(B) of the O'Mahoney bill the same words now closing section 2(A), namely, "in good faith and this may include the maintenance, above or below the price of such competitor, of a differential in price which such seller customarily maintains."

Passage of the O'Mahoney bill by the House will not necessarily be followed by a return of basing point pricing in the steel industry. As a matter of fact, as things now stand it looks as though freight absorption, when and if legalized will be resorted to on a restricted basis, largely when necessary to meet competition for desirable business. Current high freight rates, it is pointed out, make freight absorption on the scale formerly practiced uneconomical.

Seen as Help—There is little doubt legalizing of freight absorption will help the steel industry at points of excessive production in relation to home market consumption in tapping distant markets for business. This would be especially true of such points as Pittsburgh and Youngstown.

At Chicago, while a number of mills say they are largely limiting sales to the local area market and possibly would derive little benefit from a return of the basing point system, it is felt re-establishment of the basing point system would be advantageous to the national economy. This view was expressed by Inland Steel Co. officials, and Clarence B. Randall, president of that company, while admitting a change would not affect his company too greatly, said it would reopen competition in many market areas which at the present time lack it.



OPTIMISTIC: Despite recent weakening in business and a downturn in gross national product and national income, Thomas B. McCabe, head of the Federal Reserve Board, is optimistic about the future of American business and industry. Here he is shown asking a Senate banking subcommittee for broader powers for the FRB to provide "elbow room" for operations against deflation and inflation. NEA photo

Will Absorb Freight—R. K. Clifford, president, Continental Steel Corp., Kokomo, Ind., says his company "definitely" will return to the basing point system if it is legalized.

Clyde Llewelyn, vice president, Bliss & Laughlin Inc., Harvey, Ill., said the ability to compete in other areas is of especial importance to his company's eastern plants at Buffalo and Mansfield, Mass. Adoption of basing points, he said, would probably make little difference to the Harvey plant which now serves the central and western markets.

Carl J. Sharp, president, Acme Steel Co., Chicago, said his company's sales of strip are presently limited quite strictly to the Midwestern area, and that conceivably this limited market might be widened if freight absorption were possible.

Wheeling Steel Curtails

SHARP CURTAILMENT of steel production and finishing operations is being made by Wheeling Steel Corp., Wheeling, W. Va.

The reductions are: 1. Three of

ten open hearths at Steubenville, O., will be closed down; 2. one of four blast furnaces at the Steubenville Works will be blown out; 3. tandem mill operations at Yorkville, O., lowered from 35 to 30 turns a week; 4. bessemer steel works and blooming mill at the Benwood (W. Va.) Works closed for two weeks beginning June 12; and 5. Riverside blast furnace at Benwood banked for two weeks beginning June 12.

Blast Furnace Closed Down

REDUCED DEMAND for iron and steel has resulted in the closing of the No. 1 blast furnace at the Duquesne (Pa.) Works of Carnegie-Illinois Steel Corp., a United States Steel Corp. subsidiary.

Portsmouth Reduces Operations

CUTBACK in overall operations to 60 per cent of capacity was made last week by Portsmouth Steel Corp., Portsmouth, O. Present plans call for operations to be maintained at this rate for some time.

Sharon Steel Operations Off

SHARON Steel Corp., Sharon, Pa., has closed its Lowellville (O.) Works for at least two weeks and has suspended three open hearths at its Farrell (Pa.) Works.

New Hot Metal Crane Installed

STEELMAKING operations of Pittsburgh Steel Co. at Monessen, Pa., were almost at a standstill last week while the company installed a new hot metal crane.

Lukens Steel Cuts Further

TWO HUNDRED more employees have been laid off within the last ten days by Lukens Steel Co., Coatesville, Pa. Most of the 200 had been in Lukenweld, machinery-making division. Temporary curtailment of a large contract was given as the reason for the furloughing. This latest layoff puts the total of Lukens employees below the 5000 mark for the first time since 1941. However, it still is more than double the 2270 on the company's payroll in 1939.

Unemployment Rises

UNEMPLOYMENT rose 273,000 to a new postwar high of 3,289,000 in the week ended May 14, reversing the seasonal drop that usually occurs between April and May.

About 1.5 million persons with full-time jobs are working short workweeks, generally three or four days, according to the Census Bureau.

Total civilian labor force increased to 61,983,000 in May, compared with 60,442,000 in May, 1948. Total employment reached 58,694,000 in May, compared with 58,660,000 last year.

Fruehauf Business Holding Up

BUSINESS has been holding up much better for Fruehauf Trailer Co., Detroit, this year than for the truck-trailer industry as a whole.

While U. S. Census Bureau figures showed dollar shipments of the industry in the first quarter fell 20 per cent below those of the corresponding period last year, Fruehauf's first-quarter sales slipped 5 per cent.

Restores Prewar Price Policy

PREWAR price policies have been restored substantially by the Apparatus Department, General Electric Co., Schenectady, N. Y.

This move is expected to provide a stimulus to prospective purchasers, said H. V. Erben, general manager and vice president of the department.

Chrysler Pressed for Cars

CHRYSLER Corp., Detroit, can't build enough cars to meet demand for its products, according to A. vander Zee, vice president in charge of sales. There are no stocks of cars on hand.

Allocation Needs Fade

Administrative staff of OIC shrinking as workload falls off. Programs end Sept. 30

WITH its workload constantly falling off, and with no new allocation proposals on its agenda, the Office of Industry Cooperation of the Department of Commerce is shrinking rapidly.

Latest personnel resignations include A. A. Wagner, chief of OIC's Iron & Steel Division, and A. W. Mace, steel consultant in charge of allocations for the armed forces. Mr. Wagner has returned to Pittsburgh subject to call, and Mr. Mace leaves OIC June 30.

Remaining top officials are Earl W. Clark, OIC director, Charles Halcomb, Thomas R. Steele, Raymond G. Meade, Lindsay Howell, Bernard S. Van Rensselaer, Nelson C. Pierce, and Clifford A. Hahn. They will administer the programs that will continue alive, as far as now is indicated, until the Sept. 30 termination date. These remaining programs are shown in the accompanying table for July. Unless changes are made in the meantime, the same tonnages will be scheduled for August and September.

Compiling History—The OIC staff now is ccmpiling a history of the activities in meeting essential requirements on a voluntary basis under Public Law 395, 80th Congress. This will be printed in the form of a booklet. Copies will be distributed to all producers and consumers who participated in voluntary allocations arrangements, also to government departments, and members of Congress.

Chief reason for the present reduction in OIC personnel is the easing in demand for steel.

VOLUNTARY ALLOCATION PROGRAMS

Steel Requirements for July 1949 (Tonnage & Product)

Programs	Plates	Shapes	Bars H.R.	Bars C.R.	Bars Reinf.	Sheets H.R.	Sheets C.R.	Sheets Galv.	Pipe & Conduit	Seamless Tubing	Tin	Semi-Finished	Rod & Wire	Rail & Accessories	Wheels & Axles	Electrical Sheets	Total
Anthracite	225	200	150	....	....	250	....	....	250	....	....	....	....	425	....	....	1,500
Armed Forces	13,356	7,261	6,731	1,167	3,181	14,428	5,000	2,698	5,508	....	150	2,041	2,529	171	150	....	64,371
Atomic Energy	3,915	3,445	....	....	2,775	740	....	755	4,120	110	....	....	....	350	....	....	16,210
Barges & Towing Vesls.	7,300	2,250	165	....	....	75	....	....	210	....	....	....	....	....	....	....	10,000
Base Board Radiation	....	....	....	....	....	....	890	....	60	....	....	....	....	....	....	....	950
E.C.A.	24,151	....	....	....	....	8,335	1,028	495	....	....	....	....	....	....	....	3,223	37,232
Federal Aeronautical	610	150	75	....	60	55	....	....	50	....	....	....	....	....	....	....	1,000
Grain Bins	....	....	300	....	....	300	....	8,000	....	....	....	....	....	....	....	....	8,600
Merchant Vessels	8,159	1,574	470	....	....	446	....	427	653	....	....	....	....	....	....	....	11,729
Mining Machinery	8,485	2,750	4,925	200	....	1,635	15	....	400	95	....	215	70	35	175	....	19,000
Oak Ridge Pipe Line	....	....	....	....	....	....	....	....	4,750	....	....	....	....	....	....	....	4,750
Reclamation	3,165	5,195	2,355	....	6,380	855	....	....	460	....	....	....	320	280	....	560	19,570
Tank & Oil Field	5,500	195	765	....	....	6,000	....	....	540	....	....	....	....	....	....	....	13,000
Tankers	20,670	3,170	728	....	....	182	....	260	990	....	....	....	....	....	....	....	26,000
Warm Air Heating	....	....	....	....	....	....	....	9,000	....	....	....	....	....	....	....	....	9,000
Totals	95,536	26,190	16,664	1,367	12,396	33,301	6,933	21,635	17,991	205	150	2,256	2,919	1,261	325	3,783	242,912

Utilizing Tool Reserve

Air Force has shipped about 4000 units to aircraft plants in current production program

AIR FORCE'S machine tool reserve already is coming in handy. About 4000 items have been shipped from reserve to aircraft plants for use in the current production program. This has saved some $10 million in cost of facilities expansions—since without the reserve machine tool orders would have been placed in that amount.

An additional 1500 or so items will be shipped to aircraft production plants in fiscal 1950, representing an additional saving of $3,375,000.

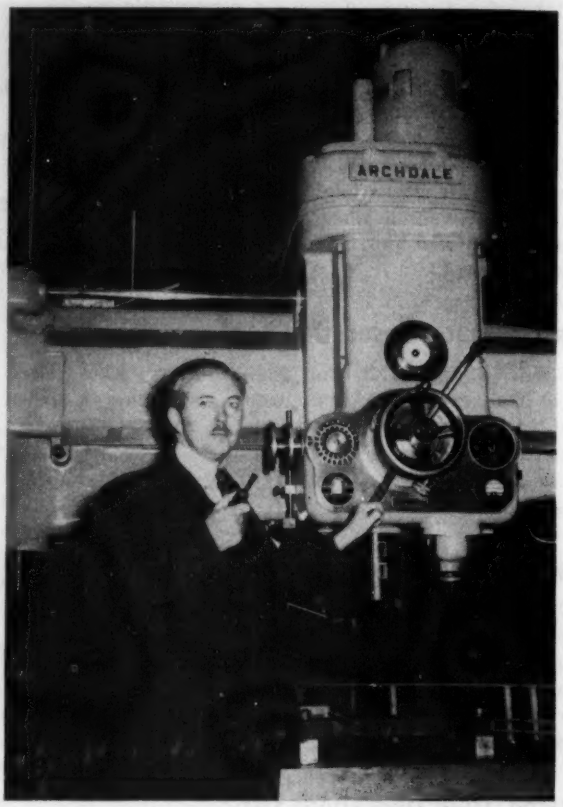
Huge Reserve—Air Force reserve consists of some 45,000 machine tools and allied equipment, to be increased by an additional 2000 during the coming fiscal year. Original acquisition cost of these 47,000 items to the government was $235 million.

Officers of the Air Force figure that, in event of war, Air Force requirements during the first year of mobilization would be about 150,000 machine tools. Air Force share of new tools that could be produced by the machine tool industry during that year would be at most 50,000, leaving a deficit of 100,000. This deficit would be alleviated partially by the 47,000 tools in reserve. Incidentally, the idle reserve, in view of the 4000 withdrawals cited above, is 43,000.

Storing Cost High—While all reserve tools come from the War Assets Administration and other surplus stocks, and therefore do not cost anything to the recipient agencies, the cost of handling, shipping and storing them is high. Air Force figures it costs an average of $150 to prepare a tool for shipment to reserve storage, with proper skidding, blocking and other means of preventing damage. Transportation to storage at Omaha, Nebr., or Marietta, Ga., (the average shipment weighs three tons) costs $100. Maintenance in storage, including disassembling, cleaning, preservation against corrosion, etc., comes to $300 per tool.

Ask More for Military Tools

MACHINE tool-minded brass hats in the National Military Establishment are preparing to ask a liberal appropriation for financing machine tool purchases during the fiscal year beginning July 1, 1950. Purpose is to rehabilitate and replace with latest models some of the equipment in the machine tool reserve.



BID FOR EXPORTS: British and Canadian machinery and tool manufacturers are making a bid for export business and were represented in force at the Canadian International Trade Fair in Toronto. Photo shows Harold A. Wilson, president of the United Kingdom Board of Trade, inspecting exhibit in the Archdale booth

Efficient Handling Seen

As cost reduction essential. Equipment sales off from year ago but outlook promising

MOST of the 200 manufacturers of material handling equipment, meeting at Grove Park Inn in Asheville, N. C., June 1-4, said their business is off somewhat from last year but pointed out that continuance of high labor rates in all likelihood will force industry to turn to more efficient handling methods.

In appraising the present situation, J. H. W. Conklin, sales manager, Clark Tructractor Division, Clark Equipment Co., Battle Creek, Mich., and president of the Material Handling Institute, said:

"Sales of material handling equipment were off slightly in the first five months of 1949 as compared with the corresponding period of 1948 but the decline of 15 to 20 per cent anticipated for the entire year will be less than for industry as a whole.

Improved Handling Cuts Costs—"This is for the reason that improved material handling methods comprise one of the few means available to industry in cutting costs in the competitive period ahead."

Mr. Conklin said he thought that material handling equipment sales this year could easily reach $700 to $800 million, second only to 1948.

The institute is co-operating with the recently organized American Material Handling Society which will have more than a dozen active chapters by the end of the year. Another activity is an educational program headed by John G. Bucuss, manager, Steel Strapping Division, Acme Steel Co., Chicago.

Other Groups Meet—Meeting with MHI were the Electric Industrial Truck Association, the Association of Lift Truck & Portable Elevator Manufacturers and the Caster & Floor Truck Association. The latter group is working on standards for casters, wheels and trucks and already has printed a list of revisions for molded-on, rubber-tired types, now available.

A national material handling show, tentatively scheduled for 1950, has been postponed until 1951.

Scrap Seminar Begins Aug. 28

INSTITUTE of Scrap Iron & Steel Inc., Washington, has opened enrollment for the scrap seminar it is sponsoring at Northwestern University, Chicago, for the week beginning Aug. 28. Only active members and employees of active members of the institute are eligible.

The seminar is designed to provide an intensive course of instruction for junior executives.

FRED W. WALKER

Upturn in Autumn

Gear manufacturers told much depends on holding wage and tax lines. Sales push needed

NEARLY 250 members and guests of American Gear Manufacturers Association, attending the 33rd annual meeting at the Homestead, Hot Springs, Va., June 5-8, heard some reassuring opinions on the general business outlook.

Although the gear business itself is off somewhat from 1948 levels, members were told that a prolonged slide is not to be expected.

A. C. Farmer, assistant to vice president, Westinghouse Electric Corp., Sharon, Pa., pointed out that unlike previous periods when business slowed down, the current period is marked by underlying firmness of the monetary structure and by tremendous potential purchasing power on the part of the public.

Due to tax collections there has been deflationary pressure during the first months of 1949. We now are in a critical period in that if increased taxes should be imposed upon industry, or a fourth round of wage increases should be granted, the deflationary pressure will continue. However, if those difficulties are avoided there should be renewed confidence and good business during the latter months of the year. This will be true particularly if the public is convinced that prices of many overpriced consumer goods have been cut to the point where it will be sensible to begin replenishing supplies.

Hits Sales Failure—The same note was sounded by Gene Flack, sales manager, Sunshine Biscuit Co., who spoke at the annual banquet. Mr. Flack said that the decay of selling during the war and postwar years has contributed much to the slowing down of business. Renewed enthusiasm and revived courtesy on the part of sales people will do a lot to start goods moving again all along the line.

The banquet was the occasion chosen to confer upon Allen H. Candee, mechanical engineer, Gleason Works, Rochester, N. Y., the Connell Award for outstanding achievement in the gear art. Mr. Candee holds more than 30 patents on methods, machines and tools for generating gears and is the author of outstanding articles and papers on gear geometry and manufacture.

Standards Studied — One of the most interesting sessions was that devoted to the nature and possibilities of standards. This featured a symposium participated in by S. L. Crawshaw, director of engineering and sales, Western Gear Works; J. H. Hunt, engineering consultant, General Motors Corp.; L. D. Price, manager of engineering development, National Electrical Manufacturers Association; and W. P. Schmitter, chief engineer, Falk Corp.

As keynote speaker, Mr. Schmitter said standardization is a natural and not an artificial process. Through the process of standardization nature always has standardized on types of animals and vegetables best suited to existing conditions.

Standardization in industry is much the same and is of maximum benefit to the ultimate consumer because it gives him more and better things for less money. AGMA is carrying on an active program of standardization aimed constantly toward safer, quieter and better gear mechanisms—a program whose benefits are reflected in the automobile industry and many others.

New Officers Announced—At the close of the meeting on Wednesday announcement was made of the new AGMA officers for 1949-50. They are: President, Fred W. Walker, who is executive vice president, Philadelphia Gear Works Inc.; vice president, Leroy Brooks Jr., who is president, Tool Steel Gear & Pinion Co., Cincinnati; and treasurer, Roger B. Salinger, who is president, Massachusetts Gear & Tool Co., Woburn, Mass.

New members of the executive committee are: Paul W. Christensen, president, Cincinnati Gear Co.; George H. McBride, sales manager, Nuttall Works, Westinghouse Electric Corp., Pittsburgh; George H. Sanborn, chief field engineer, Fellows Gear Shaper Co., Springfield, Vt.; and Robert B. Moir, vice president and chief engineer, Foote Bros. Gear & Machine Corp., Chicago. Newbold C. Goin was re-elected executive secretary with headquarters in the Empire Bldg., Pittsburgh.

LEROY BROOKS JR.

Mining Congress Plans Meeting

PLANS for a meeting of the metal and nonmetallic mining industries, to be held by the American Mining Congress in Spokane, Wash., Sept. 26-28, are being made under the leadership of Stanley A. Easton, president, Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho, and chairman of the Western Division of the Mining Congress. Working with Mr. Easton are a group of enthusiastic committees headed by R. M. Hardy, president, Sunshine Mining Co., Yakima, Wash., as general chairman of arrangements, and Roger Oscarson, manager, Northwest Mining Association, Spokane, Wash., as vice chairman.

Early in June the state chairman of the program committee will meet at Spokane with National Chairman W. J. Coulter, general manager, Climax Molybdenum Co., Denver, to draw up a program dealing with important industry problems, both in the economic and legislative field and in the field of mining and milling progress.

Celebration Planned by Timken

COMMEMORATING 50 years as a leading manufacturer of roller bearings, Timken Roller Bearing Co., Canton, O., will stage an open house at its Canton and Gambrinus plants June 20-24. Both plants have been converted into a stationary pageant for the occasion in order to tell a comprehensive story of the firm's history, industrial and community relations, business policies and philosophy.

Presiding over the celebration will be William E. Umstattd, president, assisted by other key officials of the company.

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

Senate talks economy, but votes larger appropriations. House figures increased by upper body in six of eight appropriation bills approved. Economy study proposed

DESPITE all the economy talk, the Senate continues to fight a losing battle in seeking to cut federal spending. In the eight appropriation bills it so far has acted on it has upped the already liberal House figures; in only two cases did it accept the House's action. Here is the record:

Title of bill	Voted by House	Voted by Senate
Disaster relief	$500,000	$500,000
Disaster relief	500,000	500,000
First deficiency	471,895,177	542,303,473
Treasury-Post Office	3,072,817,903	3,113,068,503
Labor-Federal Security	2,211,794,085	2,409,827,265
Army Civil Functions	593,292,270	751,440,690
Agriculture	701,122,079	723,083,249
Second deficiency	671,069,672	862,563,510

Latest moves are aimed at economies next year in the belief that it is too late to do much in this direction for fiscal 1950. Sen. Joseph C. O'Mahoney (Dem., Wyo.) has started a move for an appropriation of $1 million to enable a special staff at the General Accounting Office to analyze expenditures of all federal agencies to determine where public funds are being spent wastefully and inefficiently. In the House, Rep. Albert Gore (Dem., Tenn.) is asking $229,000 to enable GAO to make an "experimental start" by checking the expenditures of some one agency to be selected later. These motions are based on the Legislative Reorganization Act of 1946 which authorized and directed such investigations but did not provide the funds.

In the meantime, continuation of the important monitoring service of the Joint Committee on Reduction of Nonessential Federal Expenditures, headed by Sen. Harry F. Byrd (Dem., Va.) is assured as a result of a special appropriation of $20,000 to this committee.

Drafts Antidepression Bill

OMNIBUS bill to wrap up in one piece of legislation everything the federal government could do to ward off or mitigate a severe business depression is in print form and copies have been sent to selected congressmen, government officials, private officials and organizations. After modification on the basis of criticisms and suggestions, it will be introduced in Congress.

Fathered by Sen. James E. Murray (Dem., Mont.) the bill is entitled "Economic Expansion Act of 1949." It is aimed at providing "economic stability and that steady growth and expansion required to maintain prosperity and avoid depression."

Co-sponsors are Senators Thomas (Dem., Utah), McMahon (Dem., Conn.), Pepper (Dem., Fla.), Kefauver (Dem., Tenn.), Humphrey (Dem., Minn.), Sparkman (Dem., Ala.) and Kilgore (Dem., W. Va.).

Sequel to Employment Act.—Senator Murray, in a preview to the press, pointed out that the passage of the Employment Act of 1946, of which he was the principal author, and the creation of the Council of Economic Advisers, was a first step toward establishing policies of continuing full employment. In this country, he said, the economy must provide jobs for at least one-half to three-quarters of a million new workers each year; in other words, an average increase of at least 3 per cent in our total production should result from proper use of our resources and skills.

Provides for Expansion — Senator Murray said of the measure: "When study showing the need has been made, the bill makes possible the designation by the President of areas of the economy requiring expansion —such as steel, freight cars, iron ore, manganese and chromite, copper, lead, zinc, bauxite and aluminum, synthetic fuels, electric power, fertilizers, timber and newsprint. To encourage the level of investment and expansion of production needed in these areas, the bill provides: 1. Accelerated amortization; 2. credit insurance, research and loans; 3. procurement abroad; 4. utilization of government war plants; 5. government construction for use by private industry; 6. encouragement of private investment in regional development; 7. encouragement of small and independent business; 8. investigation of monopolistic restrictions on private investment.

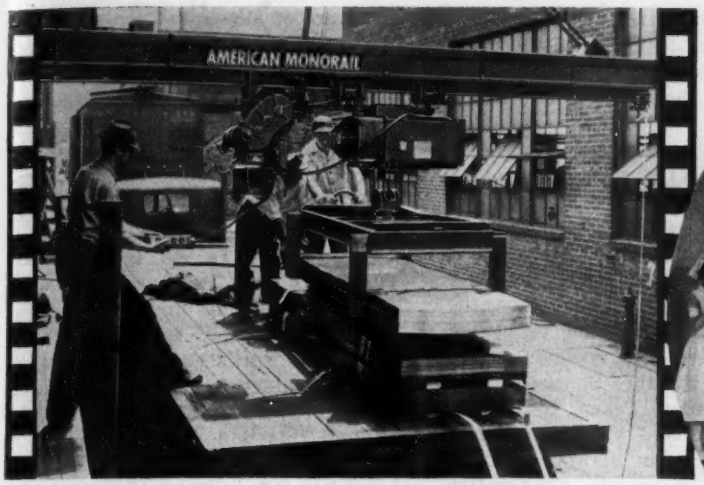
"The bill contains no authorization for government operation of any business enterprise.

"Under the proposed legislation, the National Economic Cooperation Board and the Council of Economic Advisers, aided by the other departments of the government, would study price-wage-profit relationships, hold conferences, and seek to develop public understanding and voluntary acceptance of such policies as will further adjustments between them that would maintain high levels of economic activity."

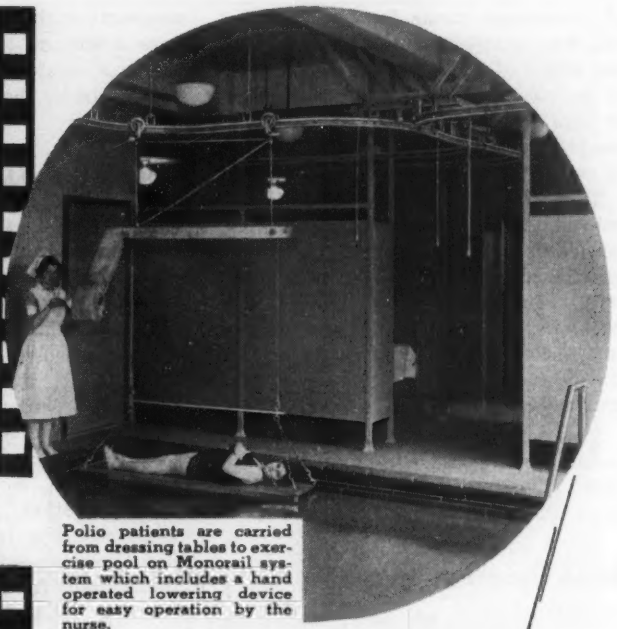
COMMISSIONER: John L. McCloy, president of the World Bank, has been nominated by President Truman to be the first United States civilian high commissioner for Germany. NEA photo

Investment Capital Studied

STUDY of how to get more investment capital into industry is a prime objective of the Joint Committee on the Economic Report. Sen. Joseph C. O'Mahoney, (Dem., Wyo.) as chairman, is working on the appointment of subcommittees to conduct four studies of which that relating to investment will be the most comprehensive. The subcommittee will probe the role of investment institutions in the investment market, in industry, and in the economy generally; of the changes in sources of investment funds and the reasons therefor; the availability and character



Another demonstration of the MonoTractor drive includes a swinging jib for passage of the carrier over a truck for removal of 2 ton bundles of sheet steel. An electric hoist and a Windsor sheet grab are used.



Polio patients are carried from dressing tables to exercise pool on Monorail system which includes a hand operated lowering device for easy operation by the nurse.

This twin-bridge 5 ton crane is 160 feet long operating on 9 runways. Two carriers, each centered between a pair of crane trucks, can make a lift of 10 tons as shown.

Fruit, unloaded from cars on special trolley racks, rolls around MonoRail curve to a drop section where the racks are lowered to basement tracks. The racks then roll by gravity to ripening rooms.

Try

UP AND OVER HANDLING

before you decide upon any material handling equipment....

Our 16 mm black and white twenty minute sound picture will bring to you the complete story of American MonoRail overhead handling. If you are in the market for any material handling equipment, see our movie first. We will gladly loan you the film for showing in your offices at a time most suited to your convenience. Please drop us a line.

*UP and OVER is the title of our 20 minute 16 mm sound film.

THE AMERICAN MONORAIL COMPANY

13102 ATHENS AVENUE CLEVELAND 7, OHIO

of investment funds for national, local, and independent enterprise, and the effect of such investment or lack of investment upon different classes or size groups in industry; and the needs, by industries, for various types of capital.

The other problems to be assigned subcommittees are those of effectiveness and co-ordination of monetary, credit, and fiscal policies in dealing with general economic policy; the problem of low-income families in relation to economic instability; and the problem of unemployment trends and their significance.

The joint committee is to report to the Senate and House by Dec. 31, 1949. To finance the studies it has been allocated $30,000.

Mine Operators Get Aid

MINE operators are justified in hoping they will fare better at the hands of Congress in this session than for some years past. The Contract Settlement Act amendment, for allowing manganese and other miners to collect on losses incidental to producing for the government during World War II, has passed the House and is on the Senate calendar. The House Armed Services Committee is planning to hold hearings soon on the Mills bill to encourage production of manganese ore for the national stockpile at guaranteed prices. The Murray-Engle Mine Incentive Payment bill, making it mandatory for the government to place contracts with anybody who can produce a mineral or metal on the critical and strategic list, has been reported out by the House Public Lands Committee.

ECA Helps Metals Industry

GREECE is assembling 26-passenger, aluminum-body busses of American make in a trade school in Athens—another example of the way the Marshall Plan helps the people of Europe to solve their economic problems. Built by the Southern Aircraft Co., Dallas, Texas, the busses must be assembled when they arrive in Greece. By an arrangement involving the Economic Cooperation Administration, the Greek government and the importer, students at the American-supervised trade school spend half their time learning mechanical trades and the other half in assembling the busses. Plans for a similar setup at Salonika now are under formulation. Of Greece's 3500 passenger vehicles 75 per cent are to be replaced as rapidly as possible with busses of American make.

Austria Gets Sheet Mill—ECA reports indicate that the 66-inch, 6-stand hot strip mill, whose construction by the United Austrian Iron & Steel Works at Linz on the Danube in the American occupation zone of Austria has been authorized by ECA, will make central Europe practically self-sufficient in steel sheets. With capacity of 12,000 metric tons of sheet per month, it will be able to take care of all requirements of Austria, and adjacent Switzerland and Bavaria. The plant, to be equipped to specifications of the Mesta Machine Co., is expected to start shipping sheets late in 1951. ECA authorizations include $1,120,000 for payment this side of June 30, 1949, and $7,900,000 on a long-range basis.

Ore Output To Be Increased — Two new ECA authorizations are aimed at stepping up iron ore production for better supply to European blast furnaces. To mechanize iron ore mines in the Lorraine area of France ECA has authorized $4 million; this will expand ore output by 5 million to 6 million metric tons annually. To enable the Divrigi mines in Turkey to produce 600,000 tons of iron ore a year, ECA has authorized $2.6 million. The ore will go to two blast furnaces erected in Turkey with World Bank funds. As a result, Turkey expects to be able, by 1952, to export 190,000 metric tons of pig iron, or 165,000 tons of pig iron and 30,000 tons of steel ingots or semifinished steel, on an annual basis.

Construction Below 1948

NEW construction put in place in May was valued at $1.6 billion, a seasonal increase of $200 million over April, and equal to the volume of May, 1948.

Industrial construction in the first five months this year was 20 per cent lower than in 1948.

JOB FINISHED: The Hoover Commission has informed the President its job is completed and has presented him with a specially bound volume of its findings. Shown at the White House are, left to right, front row: George H. Mead; Herbert Hoover; Rep. Clarence J. Brown (Rep., O.); Sen. George D. Aiken (Rep., Vt.); and Carter Manasco. Second row: James K. Pollock; Sen. John L. McClellan (Dem., Ark.); James H. Rowe Jr.; and Larry Ritchie, special assistant to the chairman. Back row: Julius Klein, chairman's assistant; Francis Brassor, secretary

Europe Studies Costs

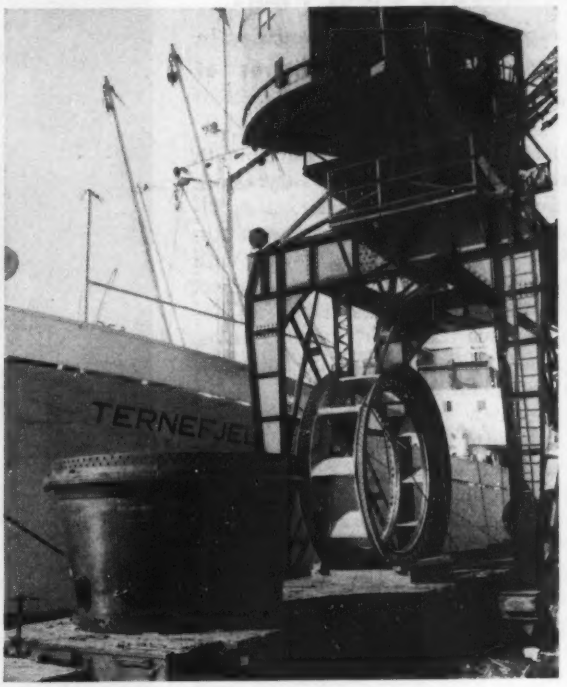
Production expense getting more attention than output gains in U. K., Germany and Belgium

EUROPE is beginning to focus more attention on production costs than output gains.

One route by which the United Kingdom is approaching the problem is through legislation. A new British patents bill, almost certain to be passed with only minor changes, would become effective Jan. 1, 1950, and embodies the principle of compulsory licensing. Aim of the measure is to seek wider use of money-saving inventions for manufacturers.

Pessimism is rising in the German steel industry as costs mount steadily.

Belgian exports of metalworking products lag as markets dwindle, but the nation's engineering firms are experiencing a resurgence as foreign demand gains for design and construction work on capital equipment.



MILWAUKEE TO NORWAY: Casing and speed ring for an Allis-Chalmers hydraulic turbine awaits loading to a Norwegian freighter at Milwaukee for shipment to Norway. The 21,700-hp unit will be installed at the Kaggefoss Hydro Power Development

United Kingdom

NEW British patents bill grants the comptroller of the patents office the right to give compulsory licenses in cases of abuse of monopoly rights, non-use, failure to export or practices contrary to public interest.

If the measure becomes law, U. K. firms may petition the patent office for a license on some invention, and the license may be given if the patent holder is failing to meet his responsibilities as defined by Parliament. Compulsory licensing is resorted to by court order only in the United States in cases involving monopoly violations. Labor proponents of the British bill favor placing the measure on the statute books with the understanding that amendments can come later after it has been tested by practice.

The Labor administration also gave another parliamentary rebuke to industry recently when it refused to act on protests over the slackening German dismantling program. Industry was told it must remain competitive with the rest of the world business through cost-reducing efficiency, not through government protection.

Steel ingot and casting production in May was at the record annual rate of 18,387,000 net tons, and pressure is increasing to have the allocation system removed or modified. The auto industry has been granted an increased allowance for the third quarter, and other industries, notably shipbuilding, expect more liberal supplies. In the first quarter of 1949, 57,500 cars, 23,000 commercial vehicles and 25,500 agricultural tractors were sold abroad, the best record in history.

Plans to establish a new steel plant at Llanelly, Carmarthenshire, have been approved and construction will begin soon. Economic Cooperation Administration has authorized expenditure of $2,730,000 for additions to plant equipment and for iron ore production apparatus for Stewart & Lloyds Co. Ltd. at Corby, Northamptonshire.

Western Germany

PESSIMISM dominated the recent meeting of the Association of the German Steel Industry. Steadily rising costs are traceable to obsolete machinery which can't be modernized without substantial foreign investment.

This was the keynote sounded by convention speakers who all expressed fear that the industry faces death if modernization, curtailed for the past ten years, is not accomplished. Tariff protection is ruled out both because of Allied commitments and because of the planned Western European customs union. German steel prices, once the lowest in the free world, at present have reached or even passed the level of neighboring steel industries. Sheet and plate quotations are already much above levels abroad. An estimated $600 million is needed immediately for equipment replacement.

Convention speakers agreed that reorganization of the industry along vertical lines, as outlined last year by Allied decrees, would aid efficiency. Practical realization of this reorganization, however, has been slow, largely because of political instability in Germany and the international situation.

The American and British military governments have announced the names of 12 Germans invited to serve as trustees of the Ruhr steel industry. They will exercise limited functions of ownership over the Ruhr iron and steel properties but will be responsible to the military governments. The trustees will serve as interim holders until new German companies, organized on vertical lines, are formed to take title.

The men are Karl Barich, Dr. Heinrich Deist, Heinrich Dinklebach, Dr. Gotthard von Falkenhausen, Willi Gellmacher, Friedrich Harders, Dr. Guenther Henle, Heinrich Meier, Dr. Arthur Menge, Dr. Herbert Monden, Erich Potthoff and Dr. Alfonz Wagner.

Belgium, Luxemburg

BELGIAN and Luxemburgian steel producers continue to shade prices and curtail output as export markets falter.

Merchant bars have an official export price of $102.25 per metric ton, but offerings have been made as low as $90.90 per ton. Concrete reinforcing bar, structural steel, wire rod and scrap quotations have also dropped. Domestic levels are fixed by law and remain firm.

Portsmouth Steel Plant

Improvements since formation in 1946 involve expenditures of almost $12 million

FORMATION of the Portsmouth Steel Corp. in 1946 by Cyrus S. Eaton, Cleveland financier, and Elmer A. Schwartz, formerly with Republic Steel Corp., was viewed with considerable interest. Since that time, the company has established an enviable record of production, sales, and earnings, resulting in an excellent financial position.

The new company bought the Portsmouth, O., works of the Wheeling Steel Corp. for $3.8 million, an extremely low price for a completely integrated plant with such extensive facilities. Cost of the properties to Wheeling Steel Corp. exceeded $30 million and it is estimated conservatively by the Portsmouth management that today's replacement cost would be over $140 million.

Kaiser Contract — When Portsmouth was organized, Kaiser-Frazer Corp. and Graham-Paige Co. purchased a sizable block of the Portsmouth common stock in return for which three-year contracts were executed for the purchase of steel from Portsmouth. Under these contracts large tonnages of slabs were shipped to Kaiser-Frazer for conversion to sheets by other mills, and a large tonnage of slabs was shipped to Wheeling Steel Corp. where, under a contract, the slabs were converted to sheets for Kaiser-Frazer. In addition, slabs and blast furnace coke were shipped to Wheeling for its own use. Both Kaiser-Frazer and Graham-Paige have since disposed of their common stock holdings in Portsmouth, and the Kaiser-Frazer and Wheeling contracts are expiring.

During its three-year tenure, the Portsmouth management has expanded and improved plant facilities by the expenditure of almost $12 million on maintenance and property additions, of which almost $5 million has been capitalized. Among the important plant additions have been the installation of a mechanized sheet mill, wire drawing and processing facilities, additions to and enlargement of soaking pits, and conversion of the open hearths from gas to fuel oil.

Sixteen new continuous wire drawing machines, built by Vaughn Machinery Co. and capable of speeds up to 3000 fpm, have been placed in operation by Portsmouth Steel Corp. Photo shows a battery of the new machines

Electrical equipment for Portsmouth Steel's new continuous wire drawing machines is shown above. Older wire drawing equipment has been modernized through installation of new devices and controls

Cover 190 Acres — The physical properties cover approximately 190 acres and include a by-product coke plant with an annual capacity of 450,000 tons, a blast furnace producing 285,000 tons per year, and a 10-furnace open-hearth shop with a capacity of 720,000 tons. Coking coal is supplied from two company-owned mines in Kentucky and loose ore is purchasd from the Cleveland Cliffs Iron Co., in which Portsmouth has an interest.

In addition to the basic steelmaking facilities, there is a 35-in. blooming mill to roll ingots, followed by a 24-in. bar mill and an 18-in. billet mill where sheet bar and billets are produced. A Linde mechanical flame scarfer has been installed between the 24-in. mill and the 18-in. mill to improve surface quality of billets used for making spring wire.

Wire Drawing Equipment—In the rod and wire division, a 17-stand rod mill produces in excess of 200 tons of rods per turn for wire drawing operations. Notable among improvements is the installation of 16 new continuous wire drawing machines

capable of drawing wire at speeds up to 3000 fpm. Other wire drawing equipment has been modernized and the speed increased through the installation of new devices and control equipment. Virtually a complete new layout of equipment has been accomplished together with modern handling facilities to reduce direct and indirect labor costs to the minimum.

Further expansion of the Wire Division has been toward the lucrative high carbon and fine wire specialty fields. This entailed the installation of two rod patenting furnaces, one wire patenting furnace, two oil tempering units and the installation of ten continuous drawing machines for intermediate sizes of wire. Two fine wire drawing machines have been installed and a new machine designed by Portsmouth engineers has recently been placed in operation which draws wire down to 0.009 in. or 36 gage at 5000 fpm.

Equipment for producing fence, barbed wire, nails, and welded fabric has been completely rearranged to permit the use of palletized handling.

Starting from scratch, three years ago, President Schwartz has built up a strong organization, one recent change being the appointment of Avery C. Adams as vice president. Mr. Adams, formerly associated as a sales executive with several large steel companies, is expanding the sales organization of the company and has already established district sales offices in several large cities.

Help Get Military Contracts

BOOKLETS aimed at assisting businessmen seeking military procurement contracts are now available for all branches with the issuing of a guide by the U. S. Air Force. Intended particularly to aid small concerns that have not previously established sales relations with the armed forces, the booklets emphasize methods of obtaining subcontracts.

At the present time the Munitions Board assigns to each of the services the responsibility for buying certain items for all three military services.

Purchasing activities of each of the branches of the military establishment as well as the locations of the field offices are included in the booklets. The Air Force booklet may be obtained, free of charge, by writing to the Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, O. The Army booklet, also free of charge, may be obtained from the Procurement Information Center, Office of the Assistant Secretary of the Army, The Pentagon, Washington 25. The Navy's booklet may be purchased from the Superintendent of Documents, Government Printing Office. Washington 25, for 15 cents.

Program for Averting Socialism

DISSEMINATION of information about private enterprise, truthfully, accurately and specifically to employees and the community is the best way to avert socialism. This was the opinion of speakers at the annual meeting of the National Industrial Conference Board at the Waldorf-Astoria Hotel, New York City.

Robert G. Dunlop, president, Sun Oil Co.; Harry E. Humphreys Jr., president, United States Rubber Co.; and Hughston M. McBain, chairman of the board, Marshall Field & Co. addressed the general session on the same topic, "A Program for Averting Socialism."

Mr. Dunlop spoke of the need for reorienting our approach and talking about competitive enterprise from the standpoint of what it does for the consumer rather than what it does for the producer. In addition this talk must be implemented with concrete, specific examples of how competitive enterprise serves the consumers of this country. " People apparently know and appreciate the results of competitive enterprise," he said, "but they seem unaware of the interrelationship of prices and profits with the production of goods and services they demand."

Best way for each company to start its economic information program is by explaining itself to its employees, Mr. Humphreys told the session.

Industry must promote free enterprise in its departments, in induction programs, in house organs, among training supervisors, in scheduling of speakers, in collective bargaining and in personal talks with employees, Mr. McBain stated. Furthermore, he said, industrial leaders must make certain that policies in their individual businesses actually jibe with free enterprise principles and that these principles are made clear to everyone in the organization and also to the general public.

Exhibitor Participation Drops

OVERLAPPING and duplication of trade shows and expositions, and the steadily increasing cost of staging them, has resulted in a drop in exhibitor participation for 1949, a survey by the Exhibitors Advisory Council has disclosed.

Approximately 1500 shows have been booked this year. This is double the average prewar annual listings, but 29 per cent of nearly 800 manufacturers who so far have participated in the survey indicate they will be taking part in fewer exhibits than in 1948.

CALENDAR
OF MEETINGS

June 13-14, Stoker Manufacturers' Association: Annual meeting, French Lick Springs, Ind. Association headquarters are at 307 N. Michigan Ave., Chicago.

June 13-15, Material Handling Institute: Great Lakes materials handling conference, Doermann Theater, University of Toledo, Toledo, O. Institute headquarters are at 1108 Clark Bldg., Pittsburgh.

June 13-15, American Society of Mechanical Engineers: 15th national applied mechanics conference, Ann Arbor, Mich. Society headquarters are at 29 W. 39th St., New York.

June 16-17, Malleable Founders' Society: Annual meeting, The Homestead, Hot Springs, Va. Society headquarters are at 1800 Union Commerce Bldg., Cleveland.

June 20-22, National Association of Purchasing Agents: 34th convention and show, Hotel Stevens, Chicago. Association headquarters are at 11 Park Place, New York.

June 20-23, American Society of Agricultural Engineers: Annual meeting, East Lansing, Mich. Society address is Box 229, St. Joseph, Mich.

June 20-24, American Standards Association: Seminar on standardization at association headquarters, 29 W. 39th St., New York.

June 20-24, American Society for Engineering Education: Annual meeting, Rensselaer Polytechnic Institute, Troy, N. Y.

June 24, Porcelain Enamel Institute: Third annual sales management conference, Carter Hotel, Cleveland.

June 27-28, American Foundrymen's Society: Chapter chairmen's conference, Chicago. Society headquarters are at 222 W. Adams St., Chicago.

June 27-30, American Electroplaters' Society: National convention, Hotel Schroeder, Milwaukee. Society headquarters are at 473 York Rd., Jenkintown, Pa.

June 27-July 1, American Society of Mechanical Engineers: Semiannual meeting, University of California Extension Bldg., San Francisco. Society headquarters are at 29 W. 39th St., New York.

June 27-July 1, American Society for Testing Materials: 52nd annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society headquarters are at 1916 Race St., Philadelphia.

July 11-16, Concrete Reinforcing Steel Institute: 25th anniversary meeting, The Greenbrier, White Sulphur Springs, W. Va. Wire Reinforcement Institute will meet July 11; Steel Joist Institute will meet July 12; American Iron & Steel Institute Committee on Reinforced Concrete Research will meet July 13; Rail Steel Bar Association will meet July 13; Concrete Reinforcing Steel Institute will meet July 14-16. Last group's headquarters are at 38 S. Dearborn St., Chicago.

July 13-15, American Society of Civil Engineers: Summer convention, Mexico City. Society headquarters are at 33 W. 39th St., New York.

July 14-15, Magnesium Association: Quarterly meeting, Hotel General Brock, Niagara Falls, Canada. Association headquarters are at 30 Rockefeller Plaza, New York.

July 22, Truck-Trailer Manufacturers Association: Mid-year general meeting, Edgewater Beach Hotel, Chicago. Association headquarters are at 809 National Press Bldg., Washington.

July 28-29, American Foundrymen's Society: Annual directors' meeting, Chicago.

The weight's in the load and not in the truck when frames, body panels, fenders, wheels and other truck structural parts are made of N-A-X HIGH-TENSILE. And while affording weight savings of up to 25% in section, the high physical properties of N-A-X HIGH-TENSILE insure superior strength and increased resistance to fatigue, corrosion, abrasion and denting.

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

This decrease in deadweight decreases on-the-job expenses, too. Trucks built with N-A-X HIGH-TENSILE consume less gasoline . . . require less maintenance . . . give longer service. And the excellent formability, weldability, and fine surface texture of N-A-X HIGH-TENSILE mean that you build them better, with no added fabricating problems.

GREAT LAKES STEEL CORPORATION N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
Unit of National Steel Corporation

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Major automakers busy with new body designs. Chrysler engineers working overtime to restyle all lines. Lincoln and Mercury may be overhauled. GM to advance new styles

DETROIT

TENOR of conversations among the thousand-odd automotive engineers last week at the summer meeting of the SAE in French Lick, Ind., was that few important changes could be looked for in passenger car design over the next couple of years, that bodies had reached their limits in exterior and interior dimensions, that model changes would be confined to the "gingerbread," etc. Either the engineers were kidding each other or playing their cards pretty close to the vest, for actually there is a considerable amount of new stuff in the works.

Chrysler Corp. body engineers have been working overtime in recent weeks developing completely restyled lines for Chrysler, Dodge, De Soto and Plymouth, with particular emphasis being placed on contours of roof, body and fenders at the rear. Apparently, the present series, introduced earlier this year, has not met with as great a degree of acceptance as had been hoped for and what appears to be a rush job of redesign has been undertaken. The new program will be handled principally in Chrysler and Briggs toolrooms, although undoubtedly there will be some jobs placed with the independent tool and die shops which currently are starving for business. A minimum of six months' time would seem to be required before the new models could be placed in production, which would bring a changeover around the end of the year.

DeSoto To Offer "Travelcar"—Shortly to make its appearance is a new DeSoto body type, called a "Travelcar," in which the rear deck opens up completely to the sill of the rear window, permitting the loading of a large volume of bulky equipment or paraphernalia. Rear seat folds out of the way to give further cargo space, similar to the arrangement of the Kaiser Traveler model, introduced a few months ago. DeSoto has been building a carry-all model in its deluxe line, with the folding rear seat feature, but the full-opening rear deck lid is entirely new and is calculated to stimulate interest among buyers of this class of vehicles. Kaiser-Frazer discovered the utility features of the combination design were attractive to many and a large share of its current production of 3000 cars weekly is devoted to this type.

Redesigned bodies for Lincoln and Mercury are likely to make their appearance before the year is out and finalizing their details should be one of the first tasks of rehired consulting designer, George Walker. It will be recalled the present Mercury lines originally were developed for the postwar Ford, before the complete upheaval in company management. After the decision was reached to develop something brand new for Ford, Mercury and Lincoln adopted the design, now destined to receive the Walker treatment for 1950. Lincoln sales have not been impressive, alongside Cadillac, for example, and new body types might provide the necessary shot in the arm to step up Lincoln production. Resumption of the Lincoln Continental model, long a favorite of the luxury trade, is another expectation for the near term. When the present series was introduced, it was stated the Continental was being deferred because of materials shortages, now a thing of the past.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1949	1948
January	445,092	422,236
February	443,734	399,471
March	543,711	519,154
April	569,728	462,323
May	505,000*	359,996
June		454,401
July		489,736
August		478,186
September		437,181
October		516,814
November		495,488
December		514,337
12 mos.		5,549,323

* Preliminary.

Estimate for week ended:

	1949	(Same week) 1948
May 21	116,878	91,138
May 28	117,703	92,772
June 4	97,995	75,607
June 11	138,000	109,831

Estimated by Ward's Automotive Reports

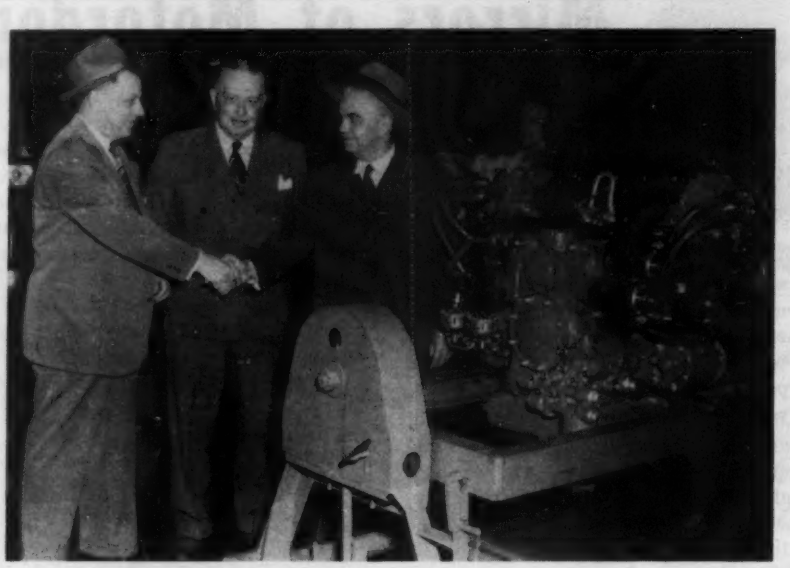
GM Body Engineers Busy—Despite its runaway production pace, General Motors is not resting with present body designs. The new "B" body series will be launched on Buick in the next six to eight weeks and its reception will be watched closely. The design is said to overcome some of the objections which have been voiced over too little headroom and legroom in current body structures. The Buick Special is the so-called "fast" back or streamlined type, providing much more headroom for rear seat passengers. The body will be adapted to Oldsmobile and Cadillac for 1950.

Meanwhile, GM's "C" bodies have not been entirely satisfactory, even though they have enjoyed near-record sales. They are being redone now by Fisher Body and should be ready for assembly lines by the turn of the year for Buick, Oldsmobile and Cadillac. The "A" body, introduced this year on Chevrolet and Pontiac, will be continued for another year with only minor modifications.

"Special" Awaited—The forthcoming Buick Special is being awaited eagerly by the industry, since it probably will prove to be the tipoff on GM's hand insofar as body design and styling are concerned. One innovation which the grapevine discloses is the combination of front bumper, guards and radiator grille into a single assembly of heavy and massive sections. Grille members probably will be die cast but they are designed to flow into and be attached to the bumper elements. Also it is understood Buick's fender "ventiports" have been relocated onto the side of the hood and changed from circular to oval shape.

These fender portholes, three on the special and super series and four on the Roadmaster, were designed originally for the utilitarian purpose of directing more fresh air into the engine compartment and over the dynaflow transmission which is inclined to the warm side when in operation. Flexible ducts lead from the chrome-ringed ports into the engine space. One difficulty has been experienced from the lack of any covering over the port openings, making them con-

(Material in this department is protected by copyright and its use in any form without permission is prohibited)



TANK ENGINE: Continental Motors Corp. has completed the first air-cooled tank engine manufactured under the company's $18 million Ordnance Department contract awarded last November. Photo shows the 12-cylinder, 810-hp unit on testing block. C. J. Reese, right, Continental president, is shown congratulating Guy J. Harinton, left, and Albert B. Willi, vice presidents, for completing the job on schedule

venient spots for pranksters and youthful saboteurs to stuff all kinds of refuse. (A flashy convertible stood outside the Durant Hotel in Flint the other evening with a gaping though very dead fish protruding from one of the ventiports). Many owners now have installed screens, perforated or slotted metal disks into the openings to protect them while still admitting air.

The ventiports quickly caught on as a decorative novelty. This may have been disconcerting to Buick designers but, imitation being the sincerest form of flattery, they have taken the trend in stride and will obsolete the present types of rings by changing their shape and relocating them onto the hood in the next models.

Study Gas Turbines

PROS and cons of the gas turbine as a power source for automobiles were reviewed by GM research engineer William A. Turunen at the SAE meeting, previously mentioned, and the cons far outweighed the pros. GM has no automotive turbines under development and contemplates none in view of surveys on the subject made both within and outside the corporation. Obstacles include high fuel consumption, particularly at part-throttle, intricate controls and limiting devices, large space and air volume requirements, questionable first cost because of expensive and hard-to-fabricate high - temperature alloys, high maintenance cost, possibly objectionable exhaust, sensitivity to temperature changes, need for a separate device to produce brake torque, problems of silencing, need for large reduction gear, and too much power for automotive requirements.

Principal advantages making the turbine attractive include its ability to use a wide range of fuels, absence of power impulses leading to reduced vibration, simplified lubrication and elimination of electric ignition except for starting.

Details on Ultramatic

ADDITIONAL technical details on the Packard automatic transmission were presented to automotive engineers at their meeting last week by Col. J. G. Vincent, vice president of engineering, and Forest McFarland, chief engineer of the company's Research Divisions. Too long to present here, the project is particularly interesting in that it meets successfully these preselected requirements, arrived at as early as September, 1944: 1. Quiet and smooth under normal operating conditions; 2. at least three forward speeds and one or more reverse speeds; 3. weight no more than present standard transmission with overdrive; 4. less costly to build than current automatic transmissions on the market; 5. interchangeable with present transmission; 6. a "positive" neutral setting to prevent movement of car when starting or racing motor; 7. freedom from creeping with the motor idling during a traffic stop; 8. provision of step-down out of direct drive for rapid acceleration under 50 mph; 9. provision of second-gear braking going down hill, required by certain state laws; 10. provision for cranking engine when car is pushed; and 11. provision for final rear axle drive ratio numerically lower than standard.

Ford Output Normal

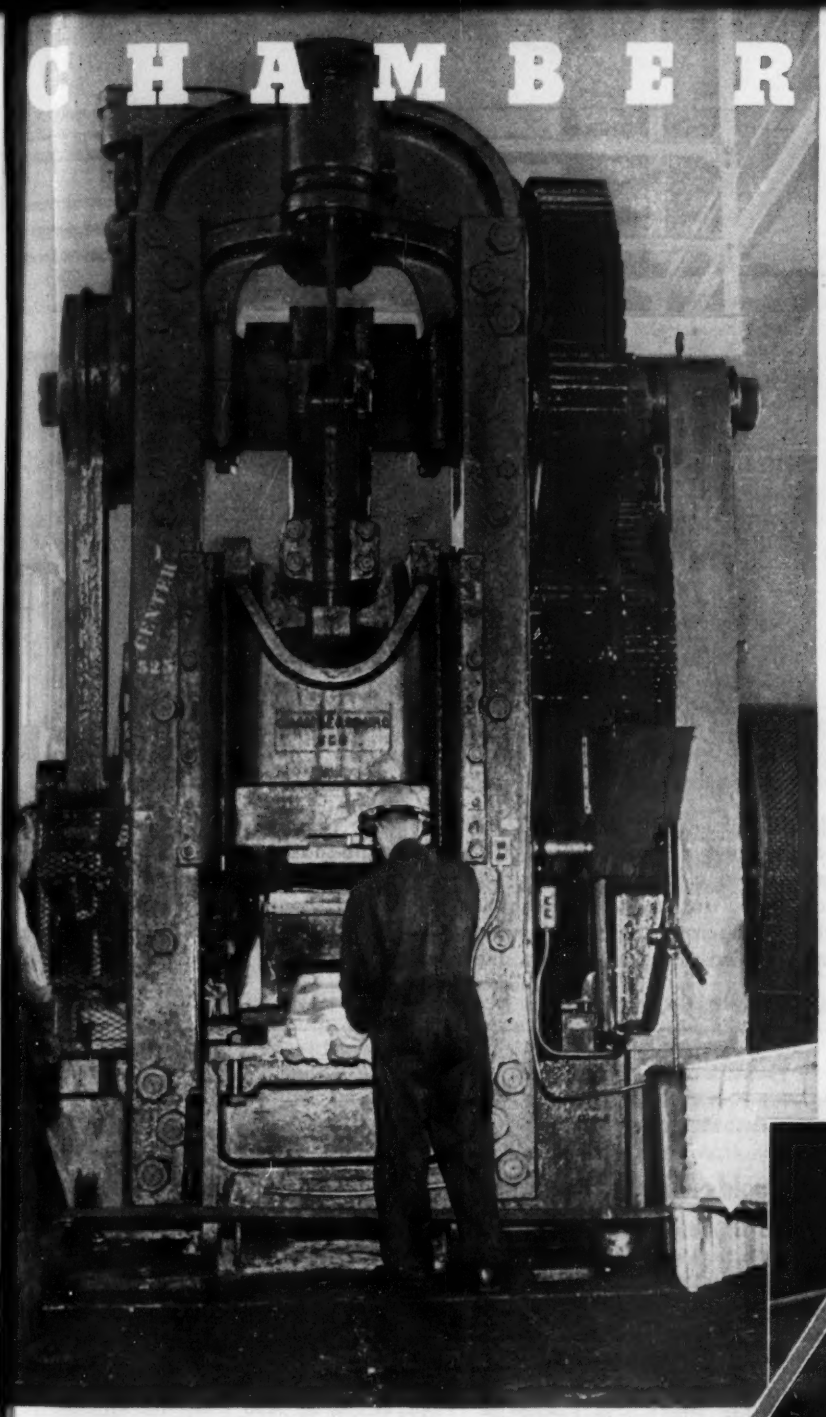
PRODUCTION of Ford-Mercury-Lincoln cars and trucks and tractors was expected to be normal or slightly better by this week, following resumption of operations at branch assembly plants. Meanwhile, negotiations on a new union contract were proceeding slowly, with company and union each operating 16-man teams. On the company team was William C. Ford, youngest of the three Ford brothers and a director of the company. It is presumed he was named so that he might "get his feet wet" on the techniques of contract negotiations, with a view to concentrating eventually on the industrial relations phase of the business.

Selection of a three-man panel to arbitrate the central issue of the recent strike went about as expected. No agreement could be reached on a single individual, so the company named Carl T. Dunn, vice president of Albert Ramond & Associates, Chicago, and the union appointed William Gomberg, director of the management engineering department of the International Ladies Garment Workers, New York. It was expected the third member would be the impartial umpire serving under the company-union contract, Harry Shulman.

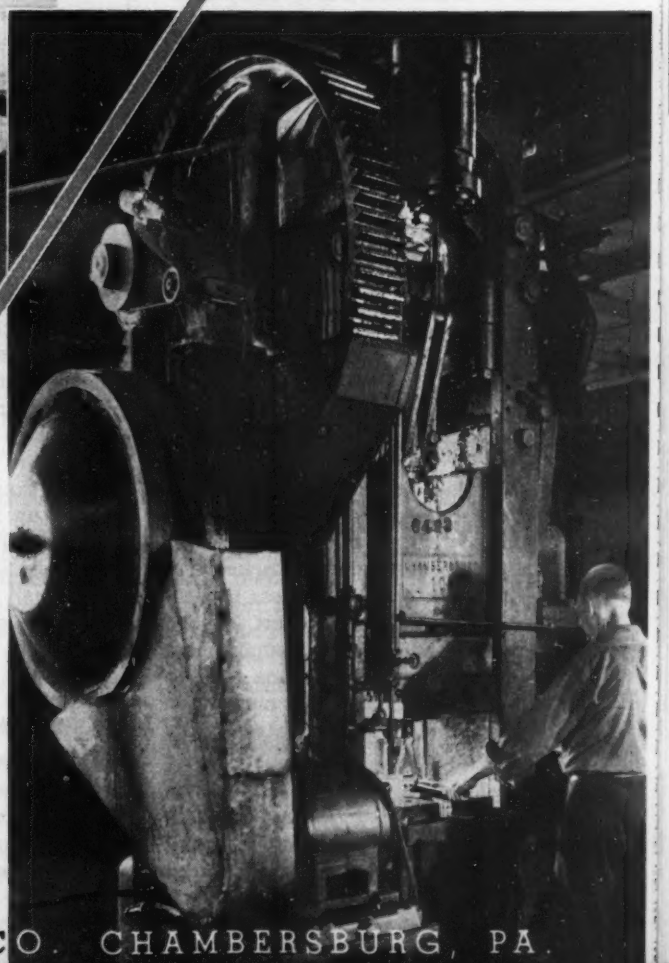
Chrysler Pays Bonuses

RECENT REPORT to the SEC discloses Chrysler Corp. paid better than $4.5 million in "contingent compensation" to 4991 employees last year (GM earmarked $40 million in bonuses to 3799), and has set aside about $6.4 million from 1948 earnings to make similar payments this year. President K. T. Keller was paid $250,800, Vice Chairman Fred M. Zeder $215,300 and Vice President B. T. Hutchinson $225,800. The extra compensation represents 5 per cent of earnings after provision for earnings of 7 per cent on invested capital in accordance with a bonus plan instituted several years ago. Eighteen other Chrysler officers received compensation payments in excess of $30,000.

CHAMBERSBURG



Here is something to consider when in the market for a trimming press:



THE CHAMBERSBURG STEEL SIDE TRIMMING PRESS IS PRACTICALLY UNBREAKABLE!

CHAMBERSBURG ENGINEERING CO. CHAMBERSBURG, PA.

Large-Scale Research

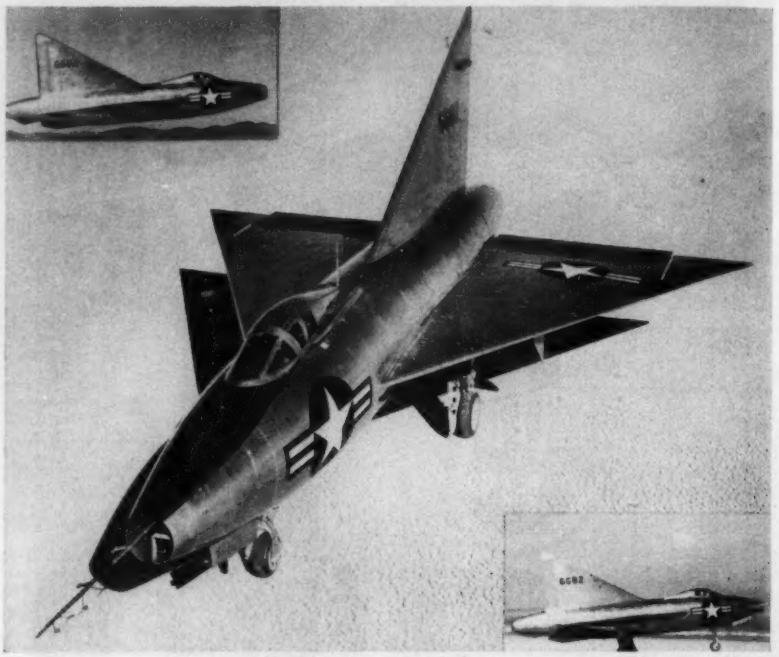
Johns-Manville applying some mass production techniques at new center near Manville, N. J.

JOHNS-MANVILLE Corp. is applying some assembly line production techniques to industrial research. Its new research center near Manville, N. J., is designed for flexible and extensive basic and developmental work to improve the quality and increase the quantity of its more than 400 building and industrial products.

Included in the 93-acre center are a product development building, research and administration structure, mechanical and engineering buildings, filtration plant and waste water treatment facility. All laboratory areas are provided with single and double laboratory space with relocatable walls as flexible as movie sets.

The product development building is arranged with a two-story section for research and a one-story area devoted to experimental manufacturing in ten pilot plants under one roof. Wire glass partitions in the corridors permit technicians to observe pilot plant operations without leaving their laboratories. The rear wall of the experimental manufacturing area is composed of removable sheets to permit temporary or permanent additions to house extra-long equipment.

The research and administration building of the group is devoted largely to pure research and primary experimental work. It is built in four and three-story sections, and the three-story portions have concrete slab roofs so that another floor may be added with a minimum of remodelling.



SHAPE OF PLANES TO COME: Air Force research plane above is Consolidated Vultee's model 7002 with triangle-shaped delta wing. The jet-powered plane, now being flight tested at Muroc Air Force base in California, was built to demonstrate the design superiority of the delta wing configuration over conventional "sweptback" wing styles. Convair engineers say drag is reduced and performance better at transonic and supersonic speeds

L.A. Foundrymen Reduce Smoke

NONFERROUS foundrymen of Los Angeles have developed a method of greatly reducing the smoke output of molten brass without the installation of expensive equipment.

All that is required is the addition of small quantities of slagging material to melting pots, plus careful supervision and good housekeeping. The comparatively smokeless process was announced by Robert Haley, aluminum and brass foundryman, who recently organized a Los Angeles Chamber of Commerce nonferrous foundry committee to attack the smog problem.

Based as it is on a simple slag crust, the process is expected to prove a boon to hundreds of small foundries in the Los Angeles area which have been targets for criticism as contributors to smog.

New Reynolds Mill Ups Capacity

A ONE-THIRD increase in capacity will result from the expansion of Reynolds Metals Co.'s aluminum wire, rod and bar mill at Listerhill, Ala. The mill, soon to be in full operation, is the major part of a program of plant integration and consolidation. Reynolds' Plant 7 in Louisville was recently closed.

The enlarged Alabama facilities, started last February, will be used to manufacture products ranging from small wire up to bar as large as 8 inches in diameter and structural shapes ranging from ¾-in. by ¾ in. angles up to a 6-in. channel. Facilities for producing a complete range of sizes of screw machine stock, hexagons, squares and rectangular bars have also been set up at Listerhill.

Makes Tubing in Unusual Shapes

ELECTRICWELD tubing in unusual shapes for streamlined modern design, and in square, rectangular, oval shapes is now being produced by Jones & Laughlin Steel Corp., it is announced. Tubing in various shapes is widely used in the furniture, automotive, construction and other industries.

Atom Research Center Unveiled

CARNEGIE Institute of Technology has unveiled its $1.5 million Nuclear Research Center in Saxonburg, Pa.

The center is scheduled to begin operations in 1950 when its synchrocyclotron is completed. One of the key parts of that unit is a 1500-ton electromagnet already set up at Saxonburg. The nuclear research project was launched in March, 1948, with Pittsburgh's Buhl Foundation grant of $300,000. Financial help was also supplied by the Office of Naval Research, the Atomic Energy Commission, Westinghouse Electric Corp. and other industries.

Introduces New Line of Valves

THE Modernair Corp., Emeryville, Calif., will introduce a new line of pneumatic valves and cylinders shortly. Designs have been simplified to use interchangeable parts made from seamless steel tubing and castings.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Gisholt Machine Co., Madison, Wis., machine tool builder, has moved its Detroit branch office to 15484 James Couzens Hwy. U. S. James remains in charge.

—o—

Air Reduction Co., New York, manufacturer of industrial gases and welding equipment, has opened a $250,000 oxygen plant in Flint, Mich. Leo Vansaw is plant superintendent. In addition to oxygen manufacture, this facility will be an acetylene gas supply point and a store room for welding equipment and supplies.

—o—

Shipping Container Institute, New York, is being dissolved now that it has completed a three-year study of the causes of rail freight loss and damage to merchandise shipped in fiberboard boxes.

—o—

Chicago Association of Commerce & Industry reports that $7,567,000 in plant outlay was planned for the Chicago area during May. One year ago, $7,762,000 was similarly invested. First five-month total in 1948 was $53,546,000, compared with $41,962,000 for the same 1949 period.

—o—

American Society of Heating & Ventilating Engineers, New York, has published the 1949 edition of its guide, containing a 992-page technical data section and a 392-page catalog of the latest products of 249 manufacturers.

—o—

Inca Metal Products Co., Birmingham, fabricating firm, is moving its operations to Carrollton, Tex., to a plant recently acquired from National Metal Products Co.

—o—

DeVilbiss Co., Toledo, O., reports that six more training courses of one week duration are available without charge to users of the company's spray equipment. Courses at the DeVilbiss spray painting school will begin on July 25, Aug. 22, Sept. 26, Oct. 31, Nov. 28 and Dec. 19.

—o—

National Military Establishment will contract for the services of a personnel management firm to study the entire military job structure in the Army, Navy and Air Force and make proposals for long-range reorganization.

—o—

Material Handling Institute, Pittsburgh, reports a materials handling course will be offered for the fall session of the Engineering Extension at the University of California. Class will be conducted by Frederick G. Hoff, mechanical engineer, 6605 Prospect Ave., Bell, Calif.

—o—

Mid-West Abrasive Co., Owosso, Mich., has purchased an Owosso plant of Michigan Sugar Co. and will rehabilitate it to expand production of abrasives.

—o—

Palmer Mfg. Corp., Phoenix, Ariz., has purchased Pacific and Superior Heating Divisions of Naco Mfg. Corp., Los Angeles, a subsidiary of Grace Steamship Lines. Palmaire Heater Division of Palmer is absorbing Pacific and Superior output.

—o—

Aluminum Alloy Division, Vanadium Corp. of America, New York, is now in commercial production at a new Chester, Pa., plant.

BEGIN DUCTILE IRON USE

FIRST machine parts made of ductile cast iron, a newly developed engineering material, have been bought by farm equipment companies, International Nickel Co. discloses.

Thirty foundries are now licensed to cast ductile iron using the International Nickel process. The metal is based upon a formula for using a small amount of magnesium, or a nickel magnesium alloy, as a mixture with common cast iron compositions.

Hickey, Abramson & Fitzgerald, engineers and consultants, have moved to 1630 McCormick Bldg., Chicago.

—o—

Clark Equipment Co., Industrial Truck Division, Battle Creek, Mich., has changed its sales setup for fork-lift trucks, industrial towing tractors and handling attachments. Sales are to be handled exclusively through a nationwide organization of independent franchised dealers, instead of through the former branch units.

—o—

Noma Electric Corp., New York, announces a corporate rearrangement whereby its Maryland subsidiary, Noma Electric Corp., is merged with the parent company. The Maryland organization operated the Estate, Heatrola, Refrigeration and K-D Lamp divisions which become direct divisions of the parent company.

—o—

Universal Valve & Fittings Co., Cleveland representative of Midwest Piping & Supply Co., St. Louis, held a meeting June 7 for users of welding fittings and piping in the Cleveland area. Following the dinner, Phil R. Becker of the St. Louis company gave an illustrated lecture on "Design and Manufacture of Welding Fittings."

—o—

Joseph T. Ryerson & Son Inc., Chicago, steel distributor, has opened a new and larger steel service plant at 5200 Grays Ave., Philadelphia.

—o—

Towmotor Corp., Cleveland, is readying production of an electric pallet hand-truck with a capacity of 4000 pounds and designed for shifting materials within a warehouse area.

—o—

Dow Chemical Co., Midland, Mich., has removed all royalty fees from the plating process for magnesium parts developed by the company with the only stipulation being that Dow be permitted free access to any process improvements made by the licensee.

—o—

Torrington Co., Torrington, Conn., and South Bend, Ind., has named the following distributors for Torrington bearings: Fischer Bearing Co., Chattanooga, Tenn.; Tennessee Bearings Inc., Knoxville, Tenn., and Electric Service & Supply Co., Odessa, Tex.

—o—

Dravo Corp., Pittsburgh, has been awarded a contract to construct a river barge unloading terminal and other coal-handling facilities at the Frank R. Phillips Power Station of Duquesne Light Co. at Wireton, Pa.

—o—

Meehanite Metal Corp., New Rochelle, N. Y., has completed arrangements with Sonith Industries Inc., Indianapolis, for the manufacture and sale of Meehanite castings. International Meehanite Metal Co. Ltd., London, has licensed the following new European plants: N. V. Holland, Bergen-op-Zoom, Holland; N. V. Wilton Fijenvord, Schiedam, Holland; and Officine Fonderie Meccaniche Oggionese Arturo Carniti, Oggiono, Italy.

—o—

Ampco Metal Inc., Milwaukee, has named the following as distributors to handle Ampco arc-welding electrodes: Omaha Welding Co., Omaha, Nebr., and Pye-Barker Welding Supply Co., Atlanta.

The Business Trend

LOSS of production due to a holiday, lower output by the steel industry and a dip in automobile assemblies below the 100,000 unit per week mark caused STEEL's industrial production index for the week ended June 4 to fall off to a preliminary 155 per cent of the 1936-1939 average, low point for the year to date. This was a drop of 13 points from the index for the preceding week but 2 points higher than for the same week in 1948.

STEEL—With steel demand only a shell of its former self, the output of steel for ingots and castings continued to slide in the week ended June 4 to 92 per cent of capacity and reached the lowest point since the week ended Dec. 25. The steady decline in the ingot rate bears out the prediction advanced on these pages some two months ago (STEEL Apr. 18, p. 72) that steelmaking operations would be around the 90 per cent level by the end of the second quarter.

COAL—Despite production below last year's levels and a two-week mine shutdown in March, coal stockpiles continue to grow. Stocks of bituminous coal amounted to about 65.2 million tons on May 1, a 7.7 per cent increase from a month earlier.

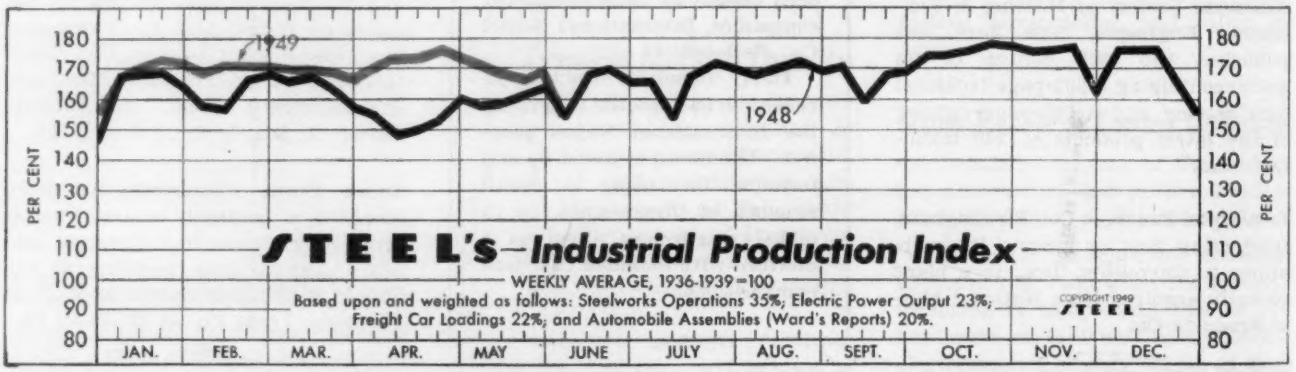
AUTOMOBILES—Return of Ford to full scale operations following a strike which cost the industry in the neighborhood of 100,000 passenger cars and trucks, promises a June outturn of about 542,000 vehicles in U. S. plants. If the industry is able to attain this goal, the total for the first half of the year will be about 2,960,000 units, a pace ahead of the annual rate in 1929 when the all-time high of 5,621,715 assemblies were produced. Whether the total for this year will top that of 1929 is anybody's guess as labor troubles are still on the horizon and industry spokesmen are predicting lessened demand for passenger cars in the fall of this year.

RAILROADS—Net railway operating income of Class 1 railroads in April totaled approximately $64.8 million, a gain of more than $10 million over the like month in 1948. The Association of American Railroads reports, however, that operating income for the first four months of this year at $193.3 million is more than $2 million below the same period last year.

POWER—Federal Power Commission reports production of electric energy by electric utilities during April totaled 23.2 billion kwhr. Although this total represents a 6.1 per cent decline from the March total, it is the highest April mark on record.

PRICES—Following an advance in the preceding week, the wholesale price index of the Bureau of Labor Statistics declined 0.3 per cent in the week ended May 31 to 156.1 per cent of the 1926 average. At this point the index is 0.6 per cent higher than 4 weeks ago but 5.2 per cent lower than in the comparable week of 1948.

CONSTRUCTION—Civil engineering construction volume totaled $123.1 million in the four-day week ended June 2. This volume is 36 per cent below that for the preceding week and 9 per cent below the corresponding week last year.



Index (chart above): Week ended June 4 (preliminary) 155 Previous Week 168 Month Ago 171 Year Ago 153

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	92.0	94.5	97.0	95.5
Electric Power Distributed (million kilowatt hours)	5,018	5,270	5,284	4,845
Bituminous Coal Production (daily av.—1000 tons)	1,886	1,856	1,922	2,278
Petroleum Production (daily av.—1000 bbl)	4,889	4,897	4,897	5,476
Construction Volume (ENR—Unit $1,000,000)	$123.1	$193.7	$129.3	$135.1
Automobile and Truck Output (Ward's—number units)	97,995	117,703	130,113	75,607

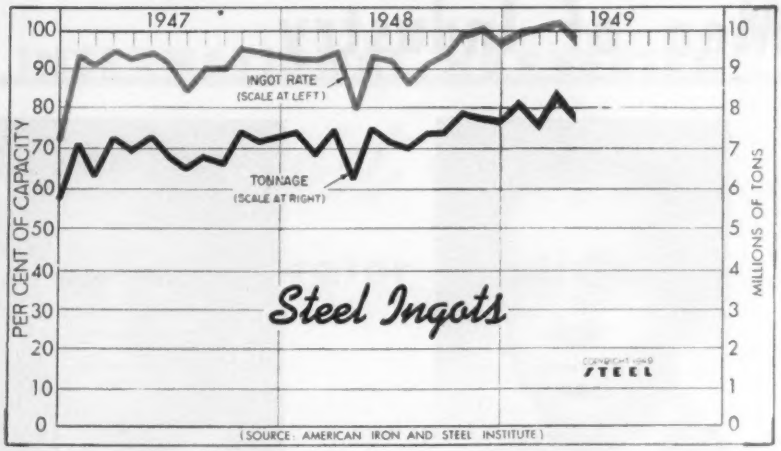
* Dates on request. † 1949 weekly capacity is 1,843,516 net tons. 1948 weekly capacity was 1,802,476 net tons.

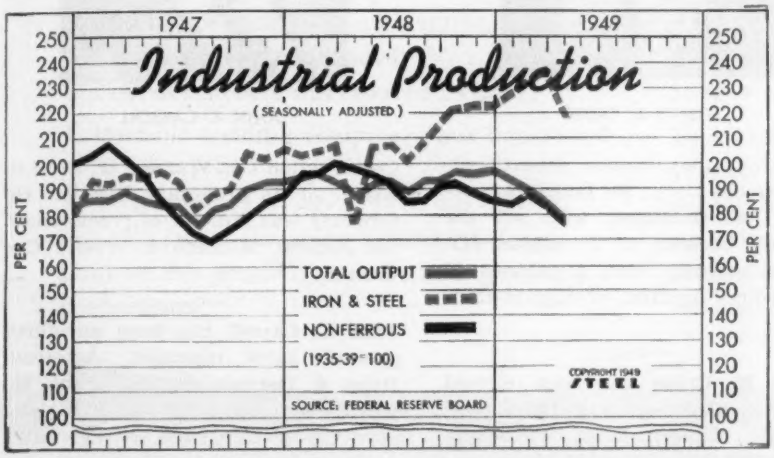
TRADE				
Freight Carloadings (unit—1000 cars)	701†	785	768	821
Business Failures (Dun & Bradstreet, number)	165	206	193	91
Money in Circulation (in millions of dollars)‡	$27,515	$27,367	$27,447	$27,895
Department Store Sales (changes from like wk. a yr. ago)‡	−8%	−5%	−4%	+19%

† Preliminary. ‡ Federal Reserve Board.

Steel Ingots

	Production (Net Tons—000)			Operating Rate (% of Capacity)		
	1949	1948	1947	1949	1948	1947
Jan.	8,183	7,473	7,213	100.2	93.6	93.2
Feb.	7,481	6,940	6,422	101.4	93.0	91.9
Mar.	8,388	7,608	7,307	102.7	95.3	94.4
Apr.	7,784	6,218	7,043	98.4	80.4	93.9
May	....	7,572	7,329	....	94.8	94.7
June	....	7,256	6,969	....	93.8	92.9
July	....	7,067	6,570	....	88.7	85.1
Aug.	....	7,438	6,982	....	93.1	90.2
Sept.	....	7,416	6,789	....	96.1	90.8
Oct.	....	7,987	7,560	....	100.0	97.7
Nov.	....	7,787	7,233	....	100.7	96.5
Dec.	....	7,771	7,366	....	97.5	95.4
Total	....	88,534	84,784 Ave.	....	94.0	93.0





Federal Reserve Board's Production Indexes (1935-39=100)

	Total Production		Iron, Steel		Nonferrous	
	1949	1948	1949	1948	1949	1948
Jan.	191	193	228	203	184	197
Feb.	189	194	232	203	186	197
Mar.	184	192	233	207	183	200
Apr.	179	188	219	177	177	198
May	...	191	...	206	...	197
June	...	192	...	207	...	193
July	...	186	...	200	...	185
Aug.	...	191	...	207	...	186
Sept.	...	191	...	214	...	191
Oct.	...	195	...	221	...	192
Nov.	...	195	...	223	...	187
Dec.	...	192	...	222	...	185
Ave.	...	192	...	208	...	193

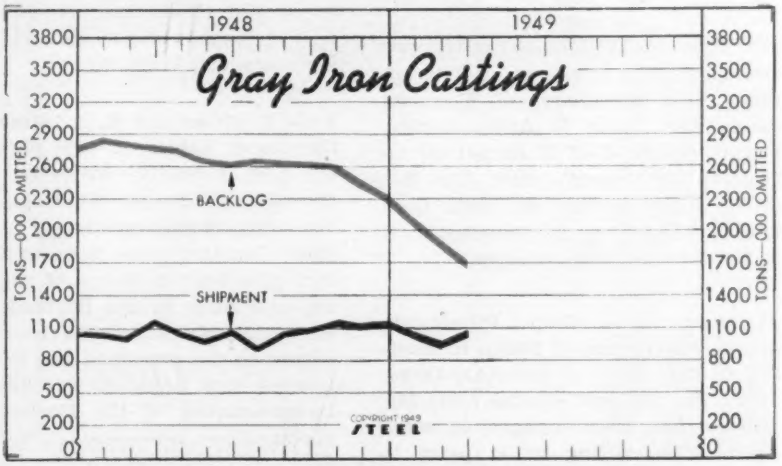
Gray Iron Castings

(U. S. Bureau of Census)

Tons—000 omitted

	Shipments		Backlogs*	
	1949	1948	1949	1948
Jan.	1,040	1,064	2,065	2,803
Feb.	987	1,024	1,857	2,769
Mar.	1,075	1,169	1,639	2,726
Apr.	....	1,051	....	2,691
May	....	993	....	2,602
June	....	1,072	....	2,587
July	....	914	....	2,601
Aug.	....	1,051	....	2,599
Sept.	....	1,088	....	2,587
Oct.	....	1,148	....	2,523
Nov.	....	1,100	....	2,407
Dec.	....	1,111	....	2,284
Total	....	12,786		

*Unfilled orders for sale to the trade.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$10,283	$12,727	$13,909	$11,752
Federal Gross Debt (billions)	$251.7	$251.7	$251.6	$251.9
Bond Volume, NYSE (millions)	$13.3	$13.9	$14.1	$15.3
Stocks Sales, NYSE (thousands)	3,742	3,836	4,693	5,003
Loans and Investments (billions)†	$62.3	$62.2	$61.3	$63.1
United States Gov't. Obligations Held (millions)†	$34,150	$33,872	$32,951	$35,237

† Member banks, Federal Reserve System.

PRICES

STEEL's Composite Finished Steel Price Average	$92.77	$92.77	$93.55	$80.27
STEEL's Nonferrous Metal Composite‡	173.7	176.1	188.1	200.9
All Commodities†	156.1	156.5	155.2	164.6
Metals and Metal Products†	167.3	167.5	169.3	157.8

† Bureau of Labor Statistics Index, 1926=100. ‡ 1936-1939=100.

Men of Industry

JAMES B. DU PRAU

JOSEPH E. CRUSE

JOHN E. CARROLL

James B. Du Prau has been elected to fill the newly created position of vice president-administration of Columbia Steel Co., San Francisco, subsidiary of United States Steel Corp. He has been serving as assistant to the president since 1943.

—o—

Kenneth D. Mann has been elected board chairman of Firth Sterling Steel & Carbide Corp., McKeesport, Pa. Until May 1 of this year Mr. Mann was manufacturing vice president of Reynolds Metals Co. He was executive vice president of Truscon Steel Co., subsidiary of Republic Steel Corp., prior to Army service. During World War II he served on General Eisenhower's staff. The last of his Army service was with General Clay, studying the proposed level of the German steel industry.

—o—

Follansbee Steel Corp., Pittsburgh, announces election of **Philip K. Poulton** to the office of secretary-treasurer. For the past several years Mr. Poulton has been engaged in management consulting work, prior to which he was associated with Talon Inc., Meadville, Pa., for 16 years, serving in various capacities which included vice president, treasurer and secretary.

—o—

Theron Howard, head of tractor sales and service in the Eastern Division of Hyster Co., Portland, Oreg., will become manager of the Peoria, Ill., plant. **J. F. Lewis,** formerly in charge of production and purchasing at the Peoria plant, has been transferred to Portland to assume duties of chief production engineer.

—o—

Tom Rankin has been appointed manager of the accessories department, Metal Goods Corp., St. Louis. He succeeds **Carl Garfinkel,** who left the company because of ill health. Mr. Rankin recently was a partner in the advertising firm of Eggers-Rankin.

—o—

Joseph E. Cruse has been elected president, Continental Farm Equipment Co., Omaha, Nebr., succeeding **Howard H. Agee. John H. Agee** succeeds Mr. Cruse as vice president, and **Richard W. Agee** was re-elected secretary and treasurer.

—o—

Fred T. Miller and **R. A. Stumm Jr.** have been appointed vice presidents of Adel Precision Products Corp., Burbank, Calif., and Huntington, W. Va. Mr. Miller, previously general sales manager, has been appointed vice president in charge of engineering and sales at the Burbank Division, while Mr. Stumm, previously assistant to the president, has been appointed vice president in charge of manufacturing of the Burbank Division.

—o—

Forbes Steel Corp., Canonsburg, Pa., announces appointment of **Edwin V. Reckley** as export manager for its Welded Wire Fabrics Division. He will also assist in general sales and planning for the company's Forbes Fabrics, the trade name given to its line of welded wire fabrics for farm and industrial uses. Mr. Reckley joined the Forbes Steel Corp. last month, after having been on the sales staff of Northwestern Steel & Wire Co., Sterling, Ill., and previously in the sales department of Pittsburgh Steel Co.

—o—

Herbert T. Wheeler has joined Hetz Construction Co., Warren, O., to be in charge of its Brokerage Division. He formerly was director of procurement for Federal Machine & Welder Co., Warren.

—o—

John E. Carroll has been appointed general sales manager, American Hoist & Derrick Co., St. Paul. He joined the company in 1937, and served as district sales representative in Texas, then Chicago and later the West Coast territory before resigning to become a partner in the firm of Harron, Rickard & McCone Co. of southern California, heading the Construction Equipment Division.

—o—

Joseph J. Folz has joined the Horace T. Potts Co., Philadelphia, distributor of iron and steel products, as a technical specialist on stainless steel tubing and fitting problems. He has had many years of engineering experience in this field, with such companies as the American Engineering Co., American Aniline Co., E. I. du Pont de Nemours & Co., and others.

—o—

Michael Miller has been appointed vice president and executive assistant to the president, Kaiser-Frazer Corp., Willow Run, Mich. He went to Willow Run in 1946 from the West Coast, and has served as vice president in charge of administrative engineering.

—o—

I. B. Anderson has been appointed sales manager of the Steel Products Division, West Virginia Steel & Mfg. Co., Huntington, W. Va. He has been associated with the steel industry for 27 years. He was employed by American Sheet & Tin Plate Co., United States Steel Corp. subsidiary, until

TINNERMAN

Speed Nut

SAVINGS STORIES

INTERNATIONAL HARVESTER *cuts cost 42%*

On Refrigerator Application

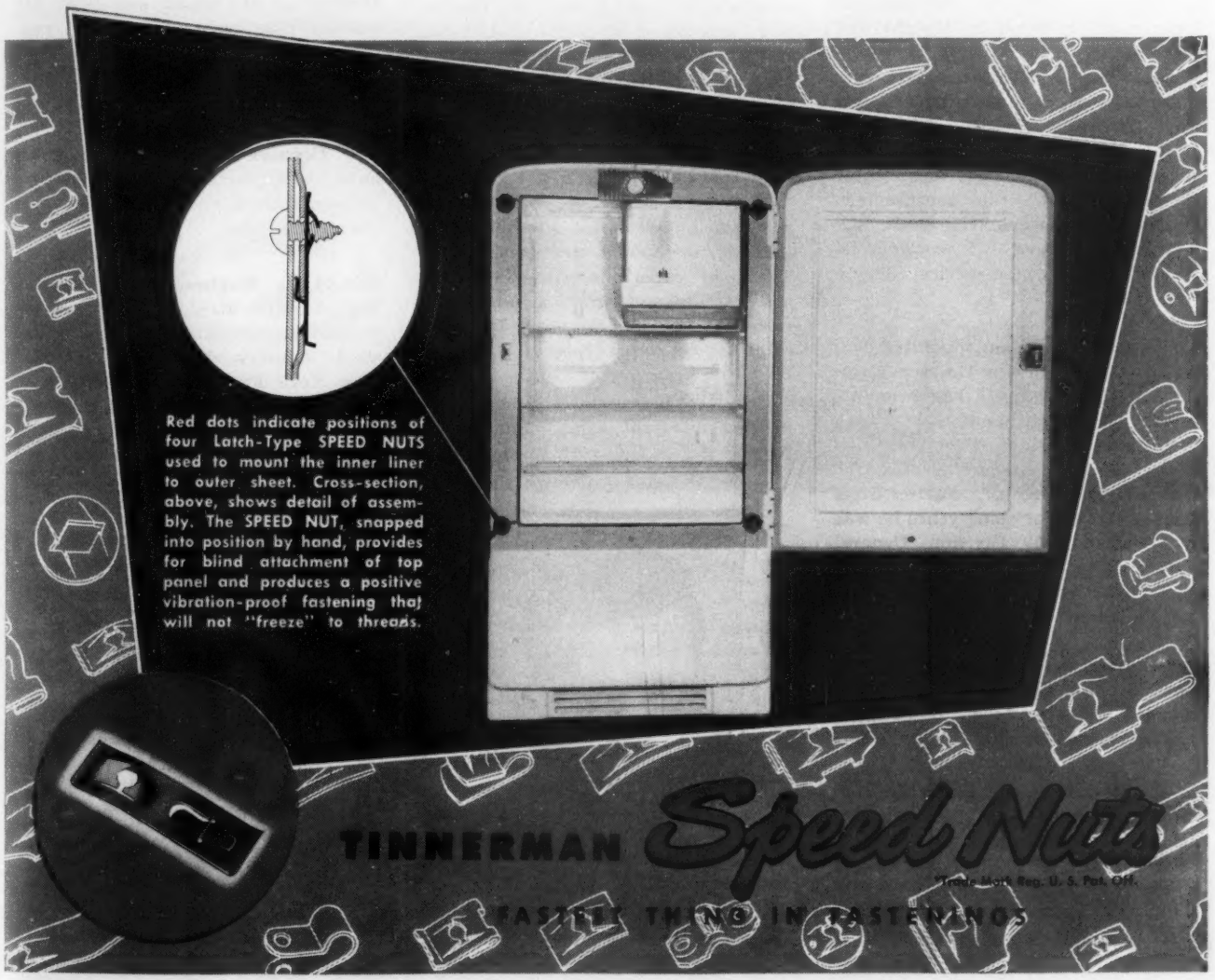
When International Harvester used four Latch-Type SPEED NUTS to replace four projected weld nuts on their new refrigerator, these important benefits were gained:

1. Cost of fasteners was reduced 24% . . .
2. Portable welding equipment was transferred to other jobs . . .
3. *Total assembly savings of* 42% *was effected!*

Just this *one* of the many SPEED NUT applications on this product created a savings of major proportions.

In your search for ways to reduce *your* costs or improve product quality, why not investigate the Tinnerman SPEED NUT brand of fasteners? The complete line includes more than 4000 shapes and sizes.

Let us conduct a thorough Fastening Analysis of your product. Your Tinnerman representative can supply details. He's listed in major city phone directories. Or write: TINNERMAN PRODUCTS, INC., 2040 Fulton Rd., Cleveland 13, Ohio. In Canada: Dominion Fasteners Limited, Hamilton.


Red dots indicate positions of four Latch-Type SPEED NUTS used to mount the inner liner to outer sheet. Cross-section, above, shows detail of assembly. The SPEED NUT, snapped into position by hand, provides for blind attachment of top panel and produces a positive vibration-proof fastening that will not "freeze" to threads.
TINNERMAN Speed Nuts
*Trade Mark Reg. U. S. Pat. Off.
FASTER THAN IN FASTENING

1932, when he accepted a position at the Wood works of Carnegie-Illinois Steel Corp. and was transferred to the Stainless Steel Division general offices in 1940. From 1945 until his recent appointment, Mr. Anderson was manager of the Stainless Steel Division, Jessop Steel Co., Washington, Pa.

—o—

George M. Woods has been appointed manager of the transportation section, industry engineering department at Westinghouse Electric Corp., Pittsburgh. He succeeds **H. E. Dralle,** recently appointed assistant manager, Eastern Engineering & Service Division at New York. **M. L. Gardner** has been appointed assistant engineering manager, district engineering and service department. He became engineering manager in May, succeeding **D. E. Inman,** who was transferred to the northwestern district. Mr. Gardner will be located at the East Pittsburgh Works.

—o—

W. F. Rauber has been appointed manager of sales, Switchgear Divisions, apparatus department, General Electric Co., Schenectady, N. Y. In the company's construction materials department, **William R. Wright** and **Alexander P. Leverty** will be representatives for wiring devices, wire and cable and conduit products covering Lancaster, Pa., and Richmond, Va., territories, respectively. **Elmer K. Stieglitz** is assigned as full-line representative to the southeastern district, and **Joseph H. Shull,** appointed supervisor of commercial scheduling and order service, Wiring Device Division.

—o—

Robert Lagas has been appointed purchasing agent, Stacey-Dresser Engineering, Cleveland. He has been assistant purchasing agent.

—o—

Carl J. Koelsch has been elected vice president and director, Warren Steel Corp., Detroit. For some years he was with Fisher Body Division, General Motors Corp., and more recently was chief buyer with Budd Co. at Detroit and Philadelphia.

—o—

Joel Claster, executive vice president, Luria Bros. & Co., Philadelphia, was awarded a degree of doctor of commercial science by Dickinson College.

—o—

S. S. Stewart has been appointed purchasing agent, Manufacturing Division, Air Reduction Sales Co., New York. He will have headquarters at Jersey City, N. J.

—o—

W. F. Brazeau, president, Intsel Metals Corp., the recently formed subsidiary of International Selling Corp., New York, recently left on a two-month trip to Europe and Africa in connection with the development of metal and mineral raw materials for import to the United States.

—o—

Dr. William B. Mather, nationally known economic geologist, has been appointed to the staff of Southwest Research Institute in Houston and San Antonio, Tex., where he will be in charge of ceramics, metallurgy, mineralogy and geology.

—o—

Fred A. Brine, assistant sales manager in the Pittsburgh territory for Universal Atlas Cement Co., subsidiary, United States Steel Corp., has retired after 40 years' continuous service.

—o—

Wilfred L. Kelley, formerly equipment engineer for Western Electric Co., has joined the distributor sales department of Radio Division, Sylvania Electric Products Inc., New York.

—o—

Robert J. Nekervis has been appointed supervisor of metallurgical development, and **Robert M. MacIntosh,** supervisor of chemical development in the newly formed corporation of Tin Research Institute Inc., Columbus, O., devoted to providing free technical service to consumers of tin in the United States. It is located at 492 W. Sixth Ave., Columbus. A sponsorship will be maintained at Battelle Memorial Institute, Columbus, to handle new researches. Technical experts are available for consultation and practical assistance either at the Tin Research Institute or at the consumers' plants.

—o—

George S. Chiaramonte has been appointed assistant sales manager, E. Norton & Son Co., with headquarters in Cleveland. He will have charge of the Cleveland and Pittsburgh areas.

—o—

M. S. Bandoli has resigned as vice president in charge of sales, Tracy Mfg. Co., Pittsburgh. He joined Tracy in July, 1948, after liquidation of Bandoli-McIntyre Co., appliance distributors on the West Coast.

—o—

Ralph H. Heberling, vice president in charge of manufacturing, Edward Valves Inc., East Chicago, Ind., has retired.

—o—

H. P. Bigler, executive vice president of Connors Steel Co., Birmingham, has been made a member of the industrial relations committee, National Association of Manufacturers.

—o—

W. Barry McCarthy has been appointed public relations manager for the western region, Ford Motor Co., Dearborn, Mich. He will have headquarters at the company's regional sales office in Richmond, Calif., replacing **John Weld,** who resigned to accept a Ford dealership.

—o—

Donald L. McCollum has been appointed plant manager of the synthetic rubber plant operated by United States Rubber Co. in Naugatuck, Conn.

—o—

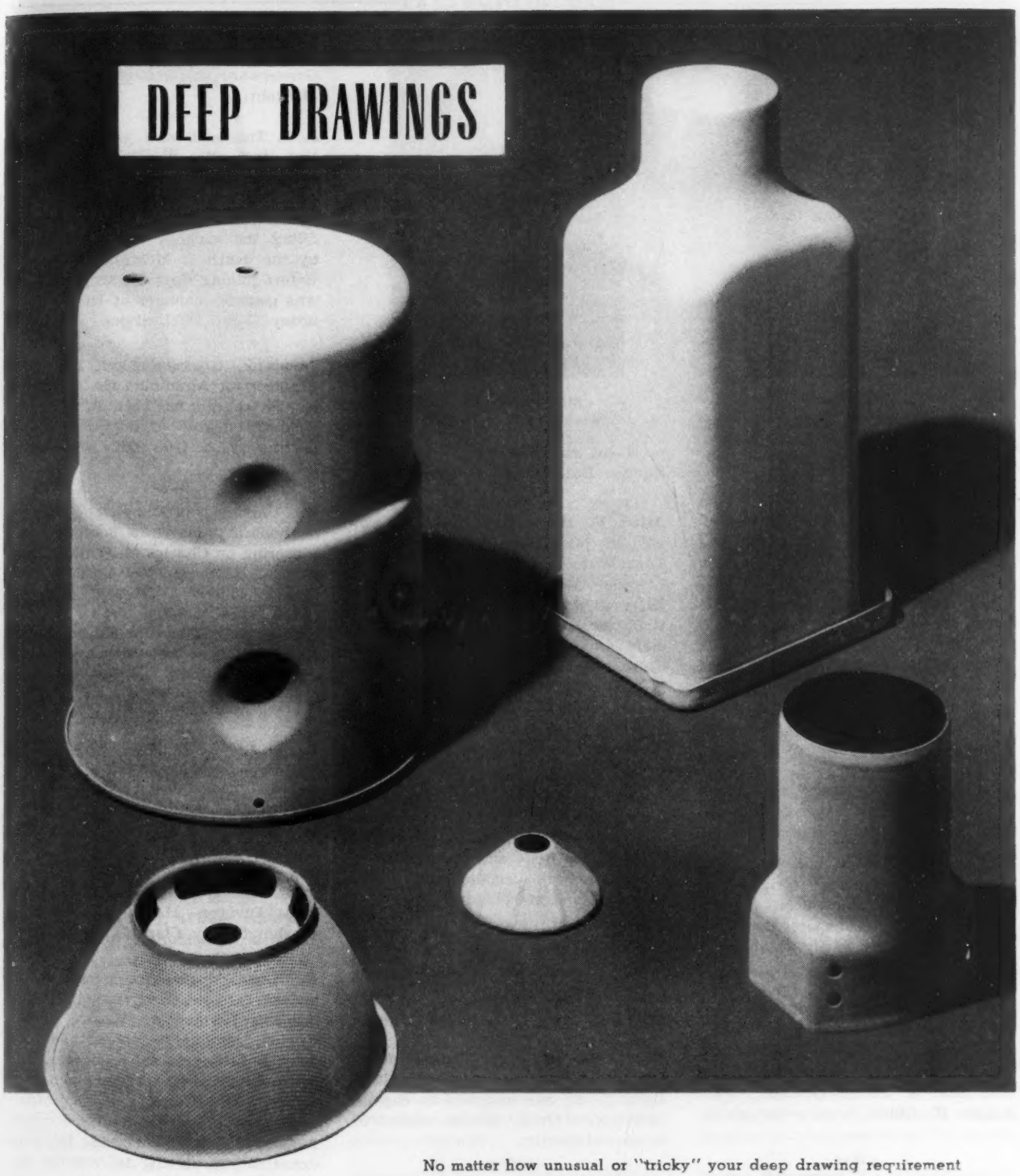
J. P. Connors and **Norbert J. Connors** have been named Pittsburgh sales representatives of National Erie Corp., Erie, Pa.

—o—

Harold L. Hughes, vice president, United States Steel Corp., Pittsburgh, is heading solicitation of the iron and steel industry during the Greater New York Fund's 12th annual campaign, according to **Edward M. Douglas,** vice president, International Business Machines Corp., and chairman

ROBERT J. NEKERVIS

ROBERT M. MacINTOSH



No matter how unusual or "tricky" your deep drawing requirement may be, we are equipped and manned to handle it. The extremely difficult we do quickly and easily—the impossible may take a little longer.

Craft specializes in large and small drawings in one piece—round, cylindrical, rectangular, in fact, any shape, any size, in any metal.

CONSULT us on your specific deep drawing problems. Submit blueprints and we will furnish quotations promptly.

Craft MANUFACTURING CO.

3949 W. Schubert Ave., Chicago.

Deep Drawing Specialists

R. W. STEERE JR.

ALLAN F. HARDY JR.

of the fund's manufacturing group.

—o—

R. W. Steere Jr. has been appointed chief engineer of Plymouth Motor Division, Chrysler Corp., Detroit, succeeding **A. W. Ross,** who has been transferred to an executive assignment with the Chrysler Central Engineering Division.

—o—

Atlas Steels Ltd., Welland, Canada, announces appointment of **Gilbert Soler,** formerly works manager, as vice president-manufacturing operations and as a director. **E. P. Geary, D. W. Lathrop** and **F. L. Whitaker** have also been added to the company's board of directors.

—o—

William H. Chaffee has been appointed vice president-refrigeration operations, and **Samuel N. Regenstrief** as vice president-refrigeration production of the newly established Refrigeration Division of Philco Corp., Philadelphia. **W. Paul Jones** is vice president of this division. Under similar establishment of separate divisions, Philco has named **Larry F. Hardy** vice president of the Television & Radio Division, with **Joseph H. Gillies,** vice president in charge of operations.

—o—

Globe Steel Tubes Co., Milwaukee, announces the following appointments: **F. K. Krell,** Chicago district sales representative, has been promoted to manager of sales, welding fittings. **John F. Scott,** New York sales representative, has been promoted to manager of sales, stainless and alloy tubing. **John Koss,** who has been in charge of export sales, succeeds Mr. Krell at Chicago, and **J. J. Lukens,** head of the Pricing Division, succeeds Mr. Scott at New York.

—o—

D. N. Smith has been appointed vice president and comptroller of Electric Storage Battery Co., Philadelphia.

—o—

Allan F. Hardy Jr. has been appointed plants engineer of Norton Co., Worcester, Mass., succeeding **Clarence W. Daniels,** retired after 36 years of service, but who will continue to participate in the management of the company as a member of the board of directors, to which he was first elected in 1925. Mr. Hardy has been assistant plants engineer.

—o—

E. B. Osborne has been appointed sales representative for Geon plastic materials, B. F. Goodrich Chemical Co., Cleveland. His territory will include Philadelphia and adjacent area, in addition to certain sections of Delaware and Maryland.

—o—

W. F. Barstow has been promoted from sales manager to general manager of Gas Atmospheres Inc., Cleveland.

—o—

C. F. Kells, secretary, Electric Industrial Truck Association, Long Island City, N. Y., has resigned to engage in industrial work. His successor will be named shortly.

—o—

John P. MacLean has been appointed assistant district sales manager at Buffalo for Republic Steel Corp. He has spent over 20 years in that territory. **John H. Higinbotham,** who joined the corporation as a salesman in New York in 1934, has been appointed assistant district sales manager at Houston, where he has been a salesman for the past 10 years.

—o—

J. D. Greensward has been appointed general manager of the Norwood, O., works of Allis-Chalmers Mfg. Co. He has served for the past three years as assistant to **W. C. Johnson,** executive vice president in charge of General Machinery Division. Mr. Greensward succeeds the late **Frank H. Stohr.**

—o—

J. L. Tunstead, who joined the central staff sales department of Koppers Co. Inc., Pittsburgh, in November, 1948, has been named sales manager of the Metal Products Division, filling the vacancy created in April by the death of **McMillan Robinson.** Before joining Koppers, Mr. Tunstead was general manager of Hearst Saturday Home Publications.

—o—

James P. Growdon, chief hydraulic engineer for Aluminum Co. of America, Pittsburgh, has been awarded the honorary degree of doctor of engineering by the University of Nebraska.

—o—

The University of Maryland conferred an honorary degree of doctor of engineering on **Charles M. White,** president of Republic Steel Corp., Cleveland.

—o—

Charles L. McCune, president, Union National Bank of Pittsburgh, was elected a director of Sharon Steel Corp., Sharon, Pa.

—o—

W. B. Flora has been named field manager, budget sales in the Associated Lines Sales Division, B. F. Goodrich Co., Akron. **Frank R. Campbell,** manager of the Washington district, Replacement Tire Sales Division, has been named sales development manager for the Southeastern Sales Division. He is succeeded in Washington by **Clare E. Sears.**

—o—

R. Nevin Watt, vice president in charge of sales, Eddystone Division, Baldwin Locomotive Works, Philadelphia, announces appointment of **John J. Littley** as sales engineer for hydraulic presses and power tools, assigned to the Chicago district office of Baldwin. Following service in the Army, Mr. Littley joined the Baldwin organization, serving in various engineering and sales capacities connected with the hydraulic press and power tool department, prior to his recent appointment as sales engineer.

—o—

Howard W. Jordan has been elected a director of National Supply Co., Pittsburgh, to fill a vacancy on the board created by the resignation of **J. H. Hillman Jr.** Mr. Jordan is chairman of the board of Metropolitan Sand & Gravel Corp., Port Washington, N. Y.

—o—

W. A. Walker has been appointed assistant to vice president-finance,

H. E. HEYWOOD JR.

Appointed assistant chief engineer, Toledo, O., plant, National Supply Co. Noted in STEEL, June 6 issue, p. 92

A. A. CAMBRIA

Appointed director of sales, Progressive Tool & Die Co., Worcester, Mass. Noted in STEEL, June 6 issue, p. 92

JOHN L. HALLETT

Appointed general manager, Kaiser-Frazer Corp., Willow Run, Mich. Noted in STEEL, June 6 issue, p. 94

Carnegie-Illinois Steel Corp., subsidiary, United States Steel Corp., Pittsburgh.

—o—

Harry F. Dart, office manager of the electronics engineering department, Bloomfield, N. J., Westinghouse Electric Corp., has been elected chairman of the New York section of the Institute of Radio Engineers for a one-year term.

—o—

R. W. Whitmore, vice president and works manager, Allen-Bradley Co., Milwaukee, electric controls manufacturer, has relinquished his post as works manager, but will continue as a vice president. **I. Francis Herbes,** formerly plant superintendent, succeeds Mr. Whitmore as works manager, and **James M. White,** who has been with the company for a year, was named assistant works manager. Mr. White was formerly with Allis-Chalmers Mfg. Co. **Edwin W. Hanke,** formerly assistant plant manager, was advanced to the post formerly held by Mr. Herbes.

—o—

Lintern Corp., Berea, O., announces election of new officers as follows: **James W. Lintern,** executive vice president; **J. N. H. Christman Jr.,** vice president in charge of engineering; **Ted Ley,** vice president in charge of production; **F. T. Siersma,** vice president; **Edward Warnoski,** assistant treasurer and auditor; **John C. Lintern,** secretary. **W. Allan Lintern** continues as president and treasurer.

—o—

Harry H. Lumley, Chicago district manager of operations for American Steel & Wire Co., Cleveland, and a veteran of the steel industry who has been associated with United States Steel Corp. since the year it was organized, has been appointed assistant to the vice president of operations of the wire company. **John R. Gaut,** assistant manager of operations, will succeed Mr. Lumley at Chicago. Mr. Lumley will continue to maintain his headquarters in Chicago.

—o—

Charles C. Cheyney, who is sales manager at Buffalo for Buffalo Forge Co., has been elected a director of the company. Also elected a director is **Arthur M. Kiely,** controller of the company.

—o—

Thomas D. Jolly, vice president in charge of engineering and purchases, Aluminum Co. of America, Pittsburgh, has been awarded the honorary degree of doctor of engineering by Rensselaer Polytechnic Institute.

—o—

Curtis C. Gary has been appointed assistant to the president, Brake Shoe & Castings Division, American Brake Shoe Co., New York. He will continue to be located in the New York office. He has been assistant to the vice president in charge of division sales since 1947.

OBITUARIES . . .

Edward W. Botten, 51, secretary-treasurer, Owen Bucket Co., Cleveland, died June 4 following a heart attack.

—o—

Joseph H. Fall Jr., 73, who until his retirement in 1944 had been chairman and treasurer, Benjamin Electric Mfg. Co., Des Plaines, Ill., died recently.

—o—

Arnold H. Schmidt, 56, superintendent, Valley Iron Works, Appleton, Wis., died May 27.

—o—

Elmer Z. Taylor, founder of Mono Service Co., Newark, N. J., acquired by Continental Can Co. in 1944, died at his home in East Orange, N. J., May 20. Up to the time of his death he had served Continental as a consulting engineer.

—o—

I. E. Bowen, 65, assistant to the purchasing agent, Chicago, American Steel & Wire Co., died May 30. He had been with AS&W since 1899.

—o—

Walter A. Forbes, 45, industrial engineer, Warner Electric Brake Mfg. Co., Beloit, Wis., died June 2.

—o—

Albert H. Segler, 65, factory superintendent, Goodman Mfg. Co., Chicago, died May 27.

—o—

Hubert Merryweather, 67, who retired in 1947 as general manager of ore properties, Bethlehem Steel Co., died June 7 at his home in Saucon Valley, Bethlehem, Pa. He had been connected with Bethlehem's mining division 36 years.

—o—

Harry Davenport, 60, superintendent of mines, Wharton Pipe & Foundry Co., Wharton, N. J., died June 4. He was the inventor of a magnetic machine used in ore mining.

—o—

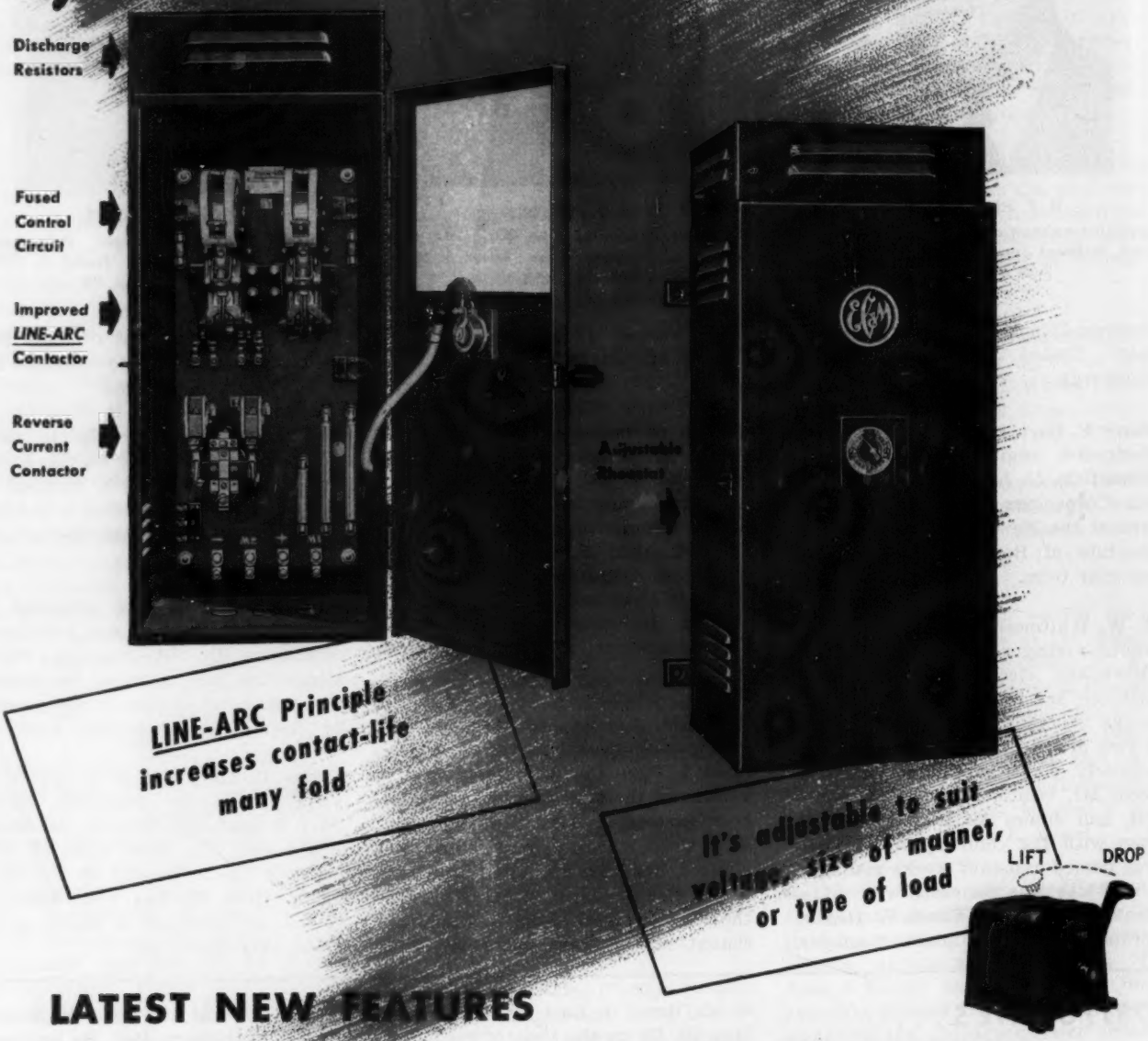
Frank B. DeLong, 61, a vice president of Columbia Steel Co., at Los Angeles, died in his car following a heart attack May 28.

—o—

Frank G. Brotz, works manager, Kohler Co., Kohler, Wis., died May 31 of a heart attack. He had been connected with the company for 41 years.

New EC&M Magnet CONTROLLER

Gives Top-notch Operation on Any Magnet



LATEST NEW FEATURES

1. Adjusting-dial on outside of cabinet.
2. Fused control circuit.
3. Improved Contactors.

Look how easily the operator may adjust this controller. The adjusting-dial, conveniently located on the outside of the cabinet, permits easy adjustment to give a clean release of *every* load. Also important are the improved characteristics of the reverse-current contactor. It closes against an adjustable spring, factory-set so that this "drop" contactor opens accurately and quickly.

These EC&M *Automatic-Discharge* Magnet Controllers are suitable for use with *any* make of magnet. Bulletin 905 gives complete details. Write for your copy today.

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET ★ CLEVELAND 4, OHIO

Engineering News
. . . AT A GLANCE

TO PROVIDE NEW LIQUID FUEL DATA— Coal gasification unit currently under construction by Koppers Co. Inc. at Louisiana, Mo., for Office of Synthetic Liquid Fuels, U. S. Bureau of Mines, is expected to provide new information on a little-known process. When completed, the plant, it is estimated, will convert 28 tons of run-of-mine coal to about 80 barrels of synthetic fuels per day using a synthesis gas, principally carbon monoxide and hydrogen, produced in a Koppers coal gasifier and a modified Fischer-Tropsch synthesis process. Gasification, which consists of suspending oxygen and steam superheated to about 2500° F, will require, besides coal the use of about 24 tons of oxygen and 35 tons of superheated steam per day.

CUSTOM MADE ANNEALING GAS— Superior, low-cost annealing gas which can be modified at will is produced by a generator introduced recently by Baker & Co. Inc., East Newark, N. J. It is reported to effect in one operation an interaction of anhydrous ammonia with air in the presence of an Englehard catalyst to form nitrogen and hydrogen. The hydrogen content is controlled within a range of from 0.5 to 25 per cent to meet exact requirements of any particular furnace load, and maintained at the determined figure within close tolerance. Finished annealing gas comes from the unit at only slightly above room temperature at a pressure of 1 pound or more.

ABRASIVE WALNUT SHELLS— Crushed walnut shells are used as the abrasive medium in a surface cleaning unit employed at General Motor's Buick Motor Division, for deburring aluminum parts for the Dynaflow drive. The unit, a multitable setup built by American Wheelabrator & Equipment Corp., Mishawaka, Ind., processes some 420 to 840 parts per hour—depending upon the size of the components.

MINIMIZES GRINDING— To withstand heavy molding pressures without premature failure, plastic mold dies must have excellent core strength and toughness. However, metal used by Eldon Mfg. Co., Los Angeles, not only meets the above requirements, but also enables the dies to be processed with minimum amount of grinding and dressing. According to the company, it uses a 4620 type nickel-molybdenum steel, which is carburized to a depth of 0.040-0.050-inch, then heat treated to a case hardness of 60-62 Rockwell C and maximum core hardness.

POSSIBLE INDUSTRIAL "TOOL"— Industrial television units like the type manufactured by Remington Rand Inc., New York, which transmits impluses over a coaxial cable rather than through the air, may be found to be a useful tool by many companies with operations requiring remote control manipulation. The Army reports it is currently employing the development in connection with its remote-controlled mechanism that permits ordnance engineers to safely defuse, debooster or disassembly hazardous high-explosive filled bombs or projectiles from behind a protective barricade. Similar setup is being used to study reactions of jet-engines when subjected to supersonic air speeds in NACA's new wind tunnel in Cleveland. A single camera in the system is capable of transmitting identical images to as many as ten different viewers located at separate points—some of them as far as 1000 feet from the camera.

NO PROCESSING BOTTLENECK— Production bottleneck caused by processing a diversified number of pressed metal parts in short-run lots was overcome in the John Deere Dubuque Tractor Works by giving special consideration to layout and equipment for the sheet metal shop. Methods of handling numerous dies involved play an important role in cutting down idle time of the volume-production presses. For example, dies are stored on steel racks along the wall opposite the line of presses in such a manner that they can be moved to and from the presses by fork trucks. Some presses also are provided with shelves on the front and back sides of the main slide to facilitate clamping of upper dies to the slides. (p. 80)

THE STORAGE PROBLEM—Probably the most effective way to lick product storage problems in plants is to design "super" processing lines operating so effectively that raw materials come in one door and leave in form of finished products through another. Unfortunately, product processing methods will require much "scientific grooming" before such an ideal setup can be instituted and, until then, the storage problem will remain a definite problem in every plant. However, there are methods of alleviating the situation. One of these is by combining mobile handling methods with flexible mechanical stacking devices that dovetail operations. (p. 84)

ROLL SELECTION IMPORTANT— Inasmuch as roughing and finishing are performed upon a single set of rolls there is always some variation in surface quality of hot-rolled strip as operations continue during a turn. According to Charles L. McGranahan, assistant general superintendent, Pittsburgh Works of J & L, careful judgment in changing rolls and selection of type of order to be rolled as the turn progresses is necessary to produce the best surface that can be obtained. He points out that it is customary to schedule the first 50 slabs after a roll change for application on hot-rolled orders as the surface is then at its best. Next 50 slabs are applied on orders requiring cold reduction as this operation can be so conducted as to heal up certain surface defects. (p. 88)

FLEXIBILITY OF SHEET METAL

By E. F. ROSS
Chicago Engineering Editor, STEEL

SOME industries, although classified as mass production, have short-run requirements for a diversified number of pressed metal parts, entailing frequent changes of die sets and idle time of presses while the changes are being made. This problem influences the choice of press equipment, die design and die handling and storage to provide maximum flexibility in sheet metal shop operation.

Such was the situation confronting Deere & Co., when in July, 1945, it began construction of a plant in Dubuque, Iowa, in which to manufacture farm tractors and engines. Completed and going into operation in September, 1946, the plant was in every respect a modern, mass production unit. Special consideration was given to layout and equipment for the sheet metal shop, in which the production runs of tractor parts range from only 500 to 2000 pieces.

Hydraulic Presses—Installed in the shop are six Fastraverse hydraulic presses manufactured by Hydraulic Press Mfg. Co., Mount Gilead, O., four of 500 tons and two of 300 tons capacity. Each has dual control front and back and is equipped with hydraulic die cushion for deep draws. Three independently operated die cushions are provided in each of the 500-ton presses to permit flexibility in the use of progressive dies. The 500-ton presses have maximum ram travel of 42 inches and pressing surfaces of 54 x 96 inches; the 300-ton units have 30-inch maximum ram travel and 36 x 36-inch pressing areas.

The four 500-ton presses stand obliquely in a line as shown in Fig. 4; the two 300-ton units are placed behind the heavy line. Dies are stored on steel racks along the wall opposite the line of 500-ton presses, Fig. 5, and in such a manner that they can be moved to and from the presses by fork trucks. These trucks also deliver skids of steel to the presses and remove skid boxes containing stacked formed parts and trimmings.

Three of the 500-ton presses have shelves provided on front and back sides of the main slide, incorporated at special request of the purchaser to facilitate clamping of upper dies to the slides.

These presses are utilized in the production of 23 different tractor parts entailing 60 operations and the 300-ton units for 29 different parts requiring 36 operations. Some of the jobs are made in single dies, others in progressive dies. Operations include notching, blanking, forming, drawing, trimming, piercing, ferruling and coining.

The company maintains its own die repair department and experience indicates that the smooth closing and operation of hydraulic presses is conducive to long die life. Statistics kept since the sheet metal shop began operation in 1946 reveal that scrap loss on the basis of defective pieces produced has been less than 0.4 per cent.

Major Tractor Parts—Among major tractor parts produced are gas tank halves, hoods, grille fronts, grille tops, fenders, oil pans, flywheel dust shields and drawbars. Most of these parts are shown in Figs. 2 and 6. Detailed descriptions of each will illustrate the range of operations performed and the flexibility of the presses and die setups.

Gas tanks are made in halves, subsequently seam welded together to form the complete tank. Stock is 0.036-inch terne plated deep drawing quality sheet steel and blank size for both top and bottom is 23⅛ x 34¾ inches. To make the top, the sequence of operations is as follows: 1. Shear stock in pieces on a Cincinnati 10-foot shear. 2. Draw to depth of 5⅞ inches in one operation in 500-ton press. Ram pressure of 400 tons is applied with 60 to 75 tons pressure on the die cushion. Production rate 45 minutes per 100 pieces. 3. Restrike radius, trim and pierce five holes on a two-position die in 500-ton press, Fig. 1. Ram pressure is 400 tons but merely a holding pressure on the die cushion. Production rate 60.6 minutes per 100 pieces. 4. Ferrule filler opening on a crank press; production rate 41.4 minutes per 100 pieces. 5. Wash.

Gas tank bottom is made in the same manner as the top, except that operation No. 4 is omitted. The same main die is used, however the insert for ferruling the filler opening in the top is replaced with an insert which provides for the nonferruled outlet opening in the tank bottom.

Tractor hoods are made from 0.042-inch cold-rolled stamping quality steel sheets, size of blank being 36 x 51 inches. Sequence of operations is as follows: 1. Shear in pieces. 2. Blank and notch ends on 500-ton press, using 300 tons ram pressure and no die cushion. Production rate is 52.8 minutes per 100 pieces. 3. Draw center panel on 500-ton press using all three die cushions. Ram pressure applied is 300 tons with 25 tons on the cushion. Production rate is 79.2 minutes per 100 pieces. 4. Pierce all holes and partial wipe flange at both ends in 500-ton press, under 300 tons pressure without die cushion. Production rate 57.0 minutes per 100 pieces.

Operation No. 5 is to emboss side panels and ferrule large holes on 500-ton press, with ram pressure of 300 tons and die cushion pressure of 10 tons. Pro-

OPERATIONS

. . . geared to "mass-produce" diversified tractor components in short-run lots

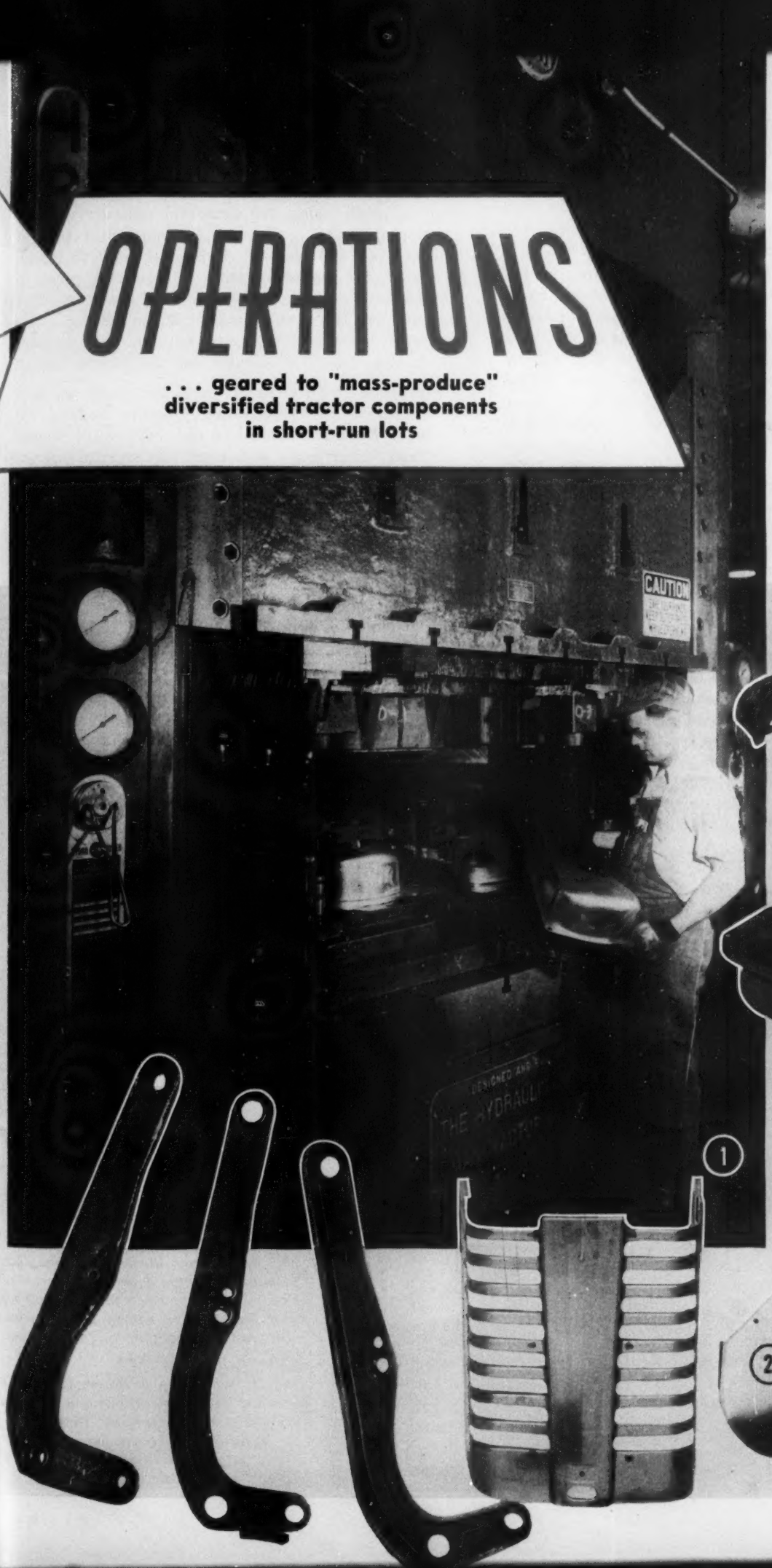


Fig. 1 — Gas tank top of terne-coated steel sheet is formed in 500-ton press in a two-position die. Depth of draw is 5⅞ inches

Fig. 2 — From left to right—draw bar beam, draw bar beam plate, beam and plate welded together to constitute draw bar, radiator grille front and fender; oil pan and two flywheel dust shields

duction rate is 54.6 minutes for 100 pieces. 6. Finish form U-section on 500-ton press, with ram pressure of 300 tons and 10 tons pressure on die cushion. Production rate is 56.4 minutes per 100 pieces. 7. Wipe edges on 500-ton press, using 300 tons ram pressure and 10 tons die cushion pressure. Production rate 61.8 minutes per 100 pieces. 8. Wash.

Making Hood — Fig. 6 illustrates three of the steps in making the tractor hood. The notched blank is at the left, the blank with center panel drawn is in the center, and the completed hood is at the right.

Tractor grille front shown in Fig. 2, fourth from the left, is one piece and is made from 0.042-inch cold-rolled stamping quality sheet steel. Blank size is 24½ x 41 inches. Sequence of operations is as follows: 1. Shear pieces in shear. 2. First draw and emboss to 1-inch depth on 500-ton press, using 350 tons ram pressure and 15 tons die cushion pressure. Production rate 42.6 minutes per 100 pieces. 3 Emboss top edge for first louvre on 500-ton press, using 250 tons pressure without die cushion. Production rate 40.8 minutes per 100 pieces.

Operation No. 4 consists of piercing for louvres, piercing three ⅜-inch holes and trimming outside edge on 500-ton press, using 250 tons pressure without die cushion. Production rate 68.4 minutes per 100 pieces. 5. Form outside edge and louvres except at center panel section on 500-ton press, using 300 tons ram pressure and die cushion pressure of 15 tons. Production rate 36.6 minutes per 100 pieces. 6. Two-man operation to finish form U-section, ferrule crank opening and finish form flange and louvres on 500-ton press, using 450 tons ram pressure and 20 tons pressure on dies cushion. Production rate 54.9 minutes per 100 pieces per man. 7. Wash.

Grille tops, shown in Fig. 7 in one of their finishing operations, are made two at a time and then cut apart. The draw of 6-inch depth, performed in two operations, is one of the deepest draws made in the Deere shop. Steel is 0.042-inch cold-rolled stamping-quality sheet, with blank size of 27⅛ x 38 inches, from which two grille tops are made.

Sequence of operations is as follows: 1. Shear in pieces in 10-foot shear. 2. Trim four corners in the shear. 3. First draw and blank to 4-inch depth in 500-ton press, using 400 tons ram pressure and die cushion pressure of 50 tons. Production rate 32.4 minutes per 100 pieces. 4. Second draw to 6-inch depth on 500-ton press, with 450-ton ram pressure and 50-ton die cushion pressure. Production rate 32.4 minutes per 100 pieces. 5. Restrike in 500-ton press under 450-ton ram pressure without die cushion. Production rate 32.4 minutes per 100 pieces.

Operation No. 6 is to part into two pieces on 500-ton press with 100 tons ram pressure without die cushion. Production rate 33.6 minutes per 100 pieces. 7. Trim lower edge and notch corners in special Brehm shimmy die in 300-ton press, with ram pressure of 250 tons and die cushion pressure of 15 tons—just enough to return the die to position. It is this operation which the press shown in Fig. 7 is performing. Production rate 52.2 minutes per 100 pieces. 8. Offset hood end and wipe all bottom edges on 500-ton press under pressure of 250 tons and 15 tons die cushion pressure. Production rate 43.2 minutes per 100 pieces. 9. Pierce and ferrule radiator filler opening on No. 6 Minster crank press. Production rate 35.4 minutes per 100 pieces. 10. Wash.

Tractor Fenders—Tractor fenders, one of which is shown in Fig. 2, at the extreme right, are made from 0.060-inch cold rolled stamping quality steel sheets. Blank size is 24 x 37 inches. Sequence of operations is as follows: 1. Shear in pieces. 2. Trim two corners in the shear. 3. Emboss in 500-ton press under 350 tons pressure and die cushion pressure of 10 tons. Production rate 34.2 minutes per 100 pieces. 4. Draw in 500-ton press, using 400 tons ram pressure and 70 tons die cushion pressure. Production rate 56.4 minutes per 100 pieces. 5. Trim and pierce all holes in 500-ton press, using 250 tons pressure and 50 tons die cushion (*Please turn to page* 120)

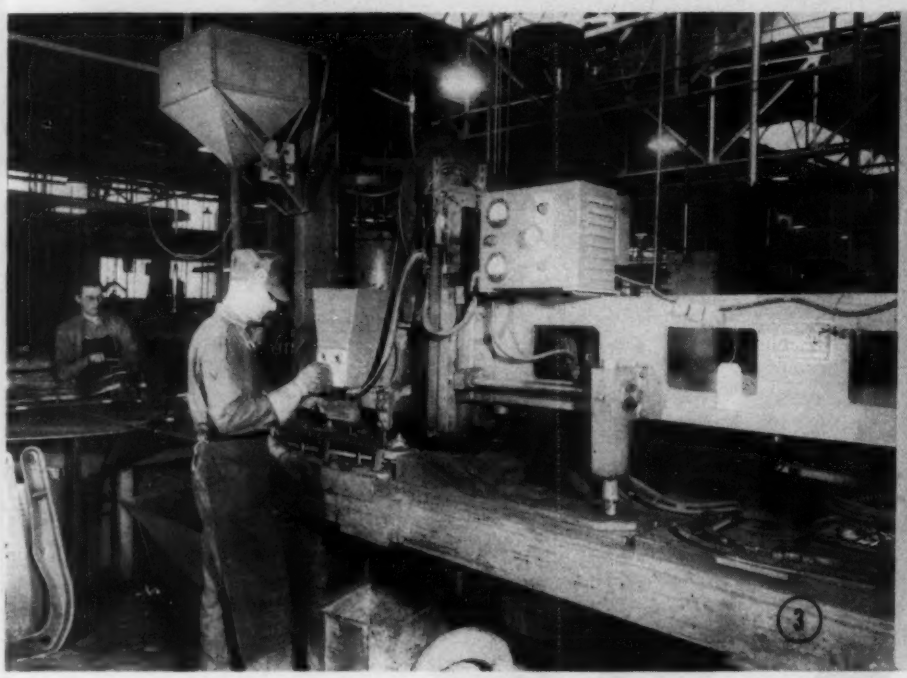


Fig. 3—Draw bar beam and draw bar beam plate are welded into one assembly in this specially-designed automatic submerged arc welding machine. Two men are required to operate it

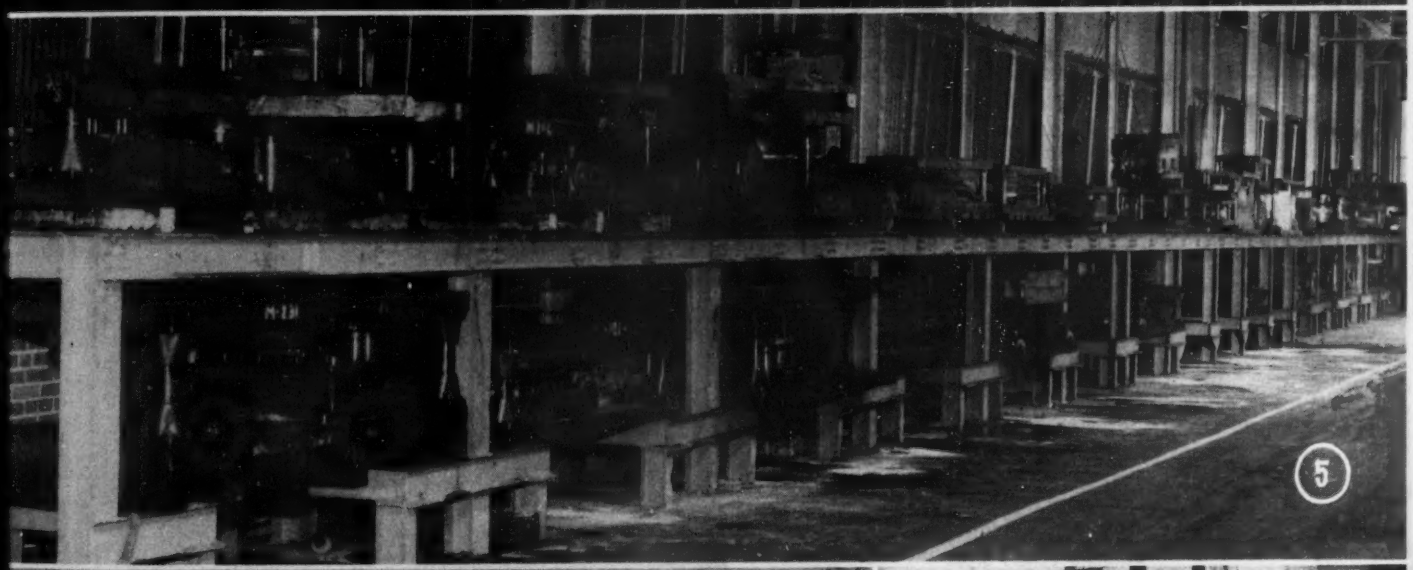
Fig. 4—Four 500-ton hydraulic presses standing obliquely in a line, form 23 different tractor parts involving 60 operations

Fig. 5—Dies for the presses are stored in steel racks facing the 500-ton presses. Fork trucks handle the dies to and from storage

Fig. 6—Top row illustrates three stages in forming a tractor hood. Bottom row shows two stages in forming the gas tank halves. Top and bottom halves are subsequently seam welded together to form a complete tank

Fig. 7—Grille top is drawn to a depth of 6 inches in two operations and is one of the deepest draws performed. First draw goes to 4 inches. Operator here is trimming lower edge and notching corners on shimmy die in 300-ton press

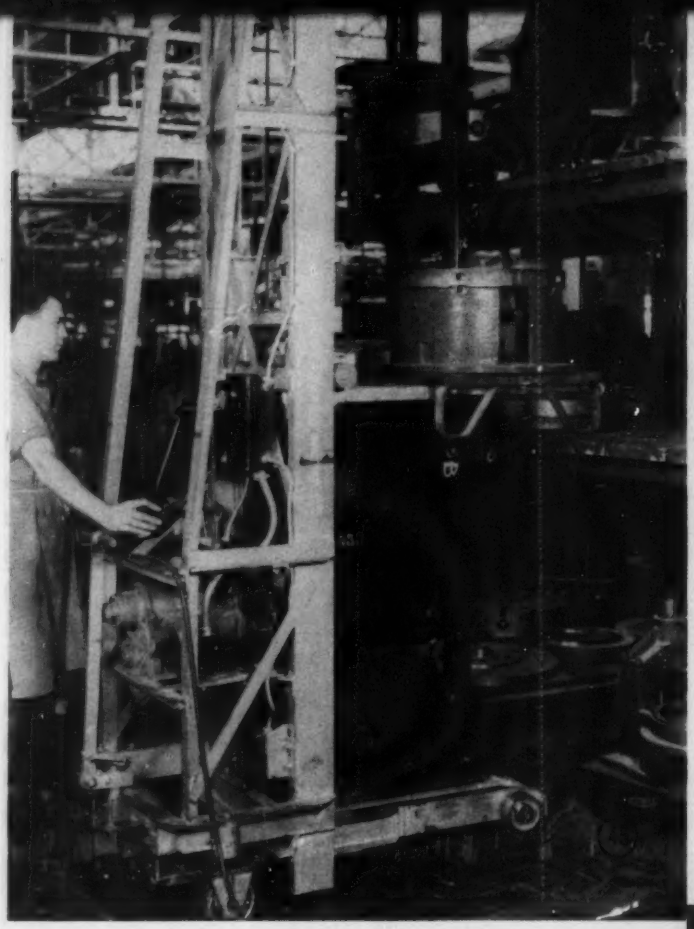
4



5

6

7



EFFICIENT ... CAN CUT ...

Part VI of the current series

In almost every manufacturing plant, floor space for storing incoming materials, parts in process and finished products is limited. By taking advantage of every cubic inch of air space, using racks and mechanical stacking equipment, sizable savings in storage area requirements can be effected. At the processing machines themselves, special handling devices can make a big difference in the overall cost picture

By WALTER F. TOERGE
Associate Editor, STEEL

COMBINED with mobile materials handling equipment, stationary and portable storage racks, bins and mechanical stacking devices can play a decisive role in reducing manufacturing costs. Surprisingly large quantities of materials can be stored in small areas when air space is fully utilized. Furthermore, while the mere saving of space is important enough in itself, proper storage practices can also eliminate damage to parts and improve inventory control.

Storage problems are not confined to warehouses. Every manufacturer has to provide a place for incoming materials. Often parts in process must be held in intermediate temporary storage once and possibly several times in the course of their manufacture. Shipping departments are always assembly points for quantities of finished products. In all of these loca-

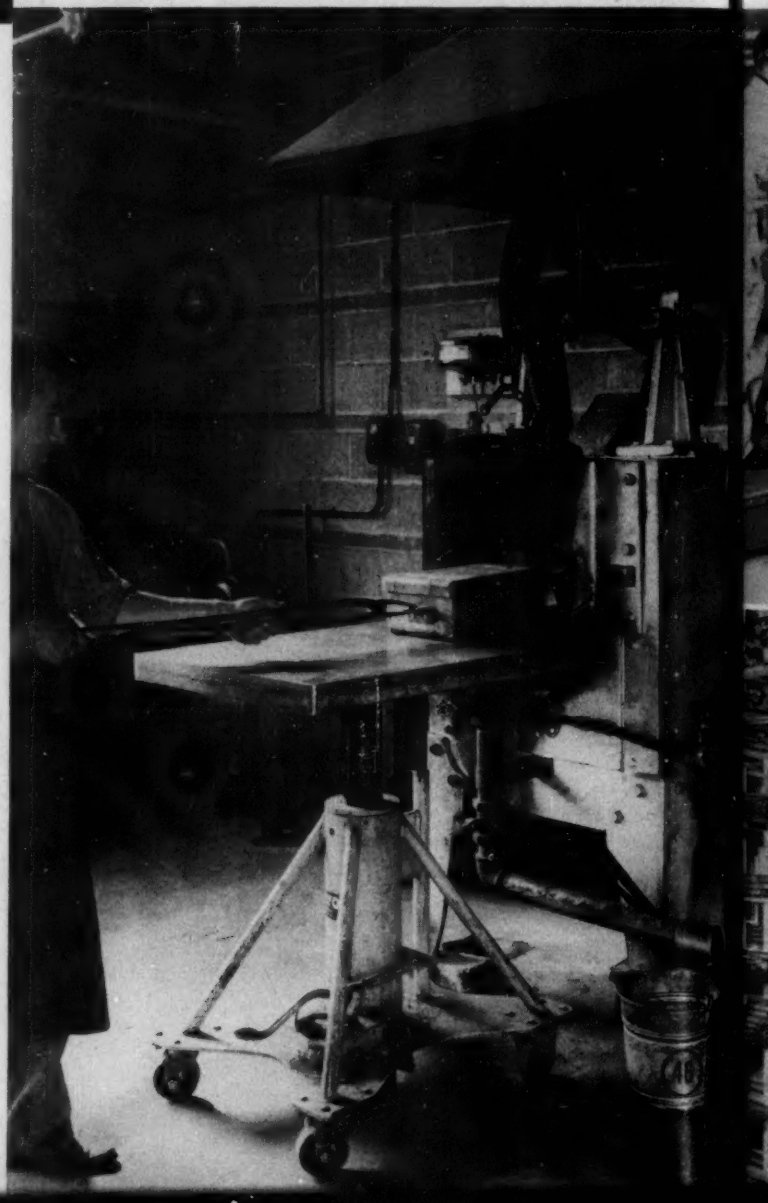


Fig. 45—Electric portable 1000-pound capacity lifter used to handle dies and fixtures in and out of racks. Courtesy Economy Engineering Co.

Fig. 46—Portable hydraulic elevating table shown here facilitating the removal of parts from heat treating furnace. Courtesy Lyon-Raymond Corp.

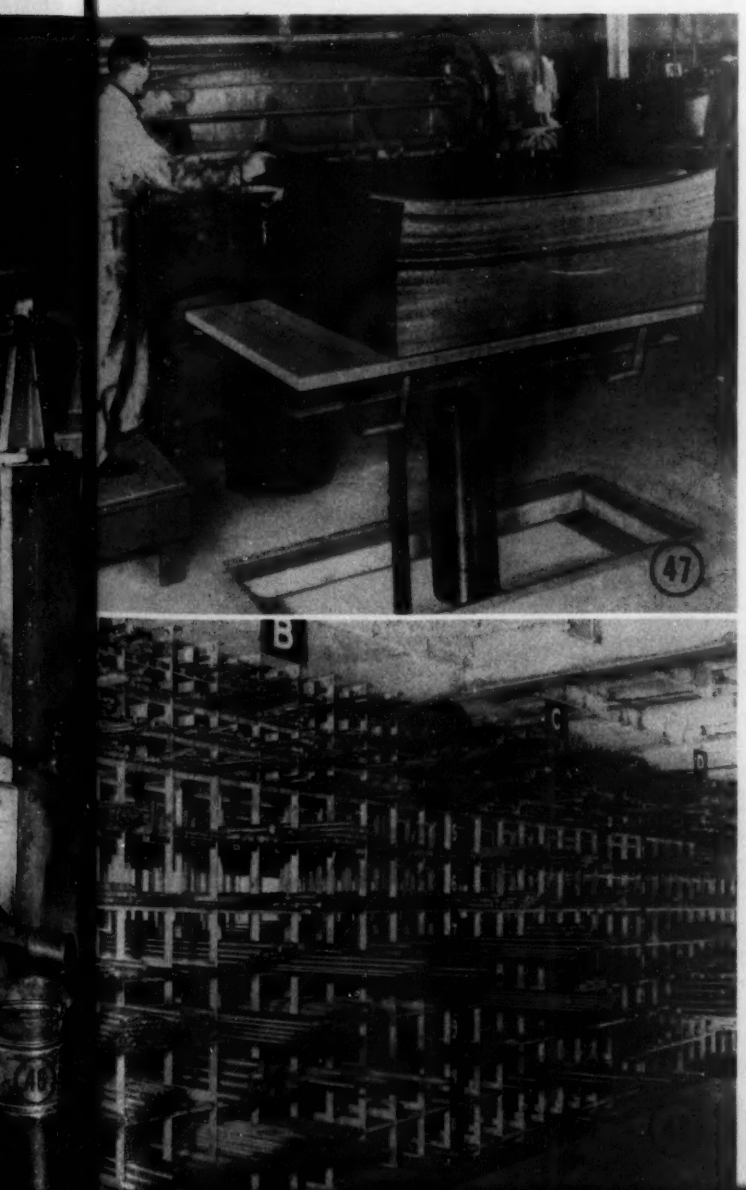
Fig. 47—Hydraulic feed table aids in feeding steel sheets into a production machine. Courtesy Joyce-Cridland Co.

Fig. 48—Inventory control is simplified by this method of storing bar stock in racks. Material is accessible and easily located. Courtesy Abell-Howe Co.

NT HANDLING METHODS
U T PRODUCTION COSTS

tions, the more effective the planning, the less space needed for storage, temporary or permanent. This is especially true of receiving departments, where timing delivery of material from outside sources exactly as required can spell the difference between need for a large storage area or for a small one.

Storage Facilities—Selection of racks for storing bulk material, steel bar stock, finished parts or other material, depends upon the nature of the material to be stocked, speed at which it moves through the storage department, features of the building, equipment available to do the handling, inventory controls in effect. Standard racks and bins are capable of handling almost every type of material; in addition, specially-designed units can be engineered for unusual parts.



For one manufacturer, the storage of 15 types of washing machine tubs ranging in diameter from 19 to 23 inches constituted a major handling problem. Shapes of necks, base contours and shape and position of drain holes were all different. By means of a specially-engineered pallet rack, the company increased capacity of the 4368-square foot storage area from 8200 stacked tubs to 14,000 tubs. Twelve tubs are loaded in each rack; the racks in turn are tiered five high, using a standard fork truck with 180-inch lift. Each stack holds 60 tubs and occupies 16½ square feet of floor area. In addition to better utilization of space, the new pallet rack has reduced the number of men needed to operate the storage area.[32]

A pigeon hole type rack is used by another company to store round and square bar stock in lengths 20 to 22 feet. The rack has 175 pigeon holes, each 16½ x 26½ inches, and occupies a space 63 feet wide and 14 feet high. Costs for handling bar stock by hand were more than $13 per ton. Of this figure, 45 per cent was used in loading and unloading the rack.

To eliminate the several handlings of bars, the company built an elevating table to run on tracks in front of the rack, with a roller section that would run into the rack on angle tracks. A lift of steel is placed on the roller section which travels into the rack, the lift is unloaded, and the roller section is withdrawn, leaving the lift of steel in place. The unit is now equipped with a device for pulling bars from the rack. The entire improved handling setup saves 60 per cent of the labor formerly used, makes the department safer and less cluttered.[33]

Space Requirements Cut—Storage space requirements in a 260,000-square foot plant manufacturing delivery vehicles have been cut 50 per cent by storing and carrying component parts in racks. Incoming material is received, sorted, placed in the racks and transported to storage areas. Sheet metal for stamped parts arrives in the fabrication department in racks. After processing, the finished parts, such as panels, fenders, doors are racked, ready to be moved to the bonderizing and prime paint conveyor. Following painting, the parts are again placed in racks and carried to storage areas near the assembly line. Rack storage at this point saves an estimated 50 per cent of floor space. Some 2000 fenders are stored with ease, as compared to the former 1000. Racks for transmission and motor storage, roof assemblies, grilles, floor boards, glass have made possible similar savings in space requirements and in addition improved production flow, eliminated heavy manual labor, improved inventory-accounting and prevented damage to parts.

From a pure volume standpoint, some racks can stock materials almost solidly. One such unit, 10 feet, 6 inches wide by 9 feet high and 14 feet deep, with 63 compartments each 12 x 18 inches will handle over 300 tons of bar stock, when fully loaded. This is practically equal to solid stocking.

A wide variety of materials and finished parts such as strip in coils or bolts and nuts can be racked, for movement or storage. In some cases, small parts, packages, boxes or crates are loaded on racks and transported to the storage or working areas, or shipped directly from the manufacturer in racks, eliminating the need for unloading and reloading at the receiving point. Heavy motors, sheet metal parts, drums, valves can all be racked with savings in storage space up to 600 per cent, and without the expense of adding to the building.

Good storage practice, aided by well-designed, properly applied racks and other devices can eliminate misplacement, marring, breaking or mixing of parts. Some rack-carriers can be transported by overhead crane, pushed or pulled around the plant by hand or by trucks, or made up in trains and pulled by a tractor.

A home appliance manufacturer saves 3000 square feet of floor space (about one-quarter of the area previously required) by stocking thousands of small parts in 250 steel shovel bins, each capable of holding 15 to 20 kegs of washers, bolts, nuts, etc. In the receiving department, the 3 x 4-foot 18-inch deep containers are tiered, four or five high. As parts are needed on the assembly line, workers scoop them out of the bins into tote pans which are then transported by industrial truck to assembly points. Fork trucks take away the empty containers, replacing them with filled bins.

Storerooms and Production—The relationship of properly functioning storerooms to production operations is a vital one. In many industrial plants, stock clerks are expected to work miracles in operating their departments with inadequate storage aids or handling equipment. For efficient storeroom operations, the following tools, in addition to proper and adequate storage area, are considered basic:

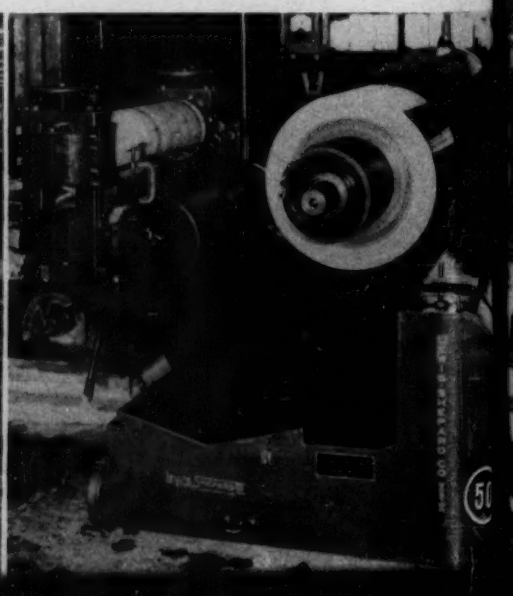
1. Complete data on materials to be stored
2. Handling aids and storage equipment such as racks, bins, lift trucks, etc.
3. Inventory control and records and a working locator system
4. Competent personnel

In deciding on a basic storage procedure and the storage aids and handling equipment to be used in a given situation, the quantity and physical characteristics of the materials to be stored and their rate of turnover are the prime factors to be considered. These factors may vary considerably with the type of product and the operation involved. Fast moving materials generally should be stored in a location immediately accessible to the point of use or issue. Individual stock levels should be established to set the maximum storage space needed. Materials in storage must be adequately identified to facilitate efficient operation of the storeroom. The basic storage plans themselves may be either alphabetical and numerical, storage by space, or by space and locator system, or by modifications of these. All these systems have their advantages and disadvantages, and they all require very close co-ordination with inventory control and operating departments.[34]

For piling and stacking materials handling engineers have designed several types of portable and stationary elevators and elevating machines. One man operating an elevator can store crates, boxes, sacks, bags, loaded skids, heavy objects such as dies, enabling the plant to change square to cubic space.

Handling at Machines—Portable or stationary elevating tables used at presses and other processing machinery can contribute substantial improvements to the operation of the equipment by eliminating some of the manual labor. This type of equipment is essential in numerous shops for handling heavy dies, jigs, fixtures and tools. Hydraulic elevating tables for feeding strip and sheet metal to punch presses and shears are extremely valuable. As the load is fed, the table top is raised so that no lifting or other manual handling are required to keep the metal at the proper level. Heavy or overbalanced pieces are held, without clamping or built up supports, at the correct height for machining operations.

Angle shearing in one plant presented an unusual handling problem solved by some on-the-spot engineering. Steel angles in 60 foot lengths and weighing up to 1200 pounds were handled by hand and at a cost of $9.80 per ton for shearing, and $11.10 per



ton for burning. Formerly, a converted punch sheared most of the angles, while the balance were cut by acetylene torch.

Methods and time studies and cost analyses revealed a great deal of inefficiency, using the old methods. Thirty-three per cent of the operator's time was spent pulling the angles over a set of v-shaped rollers from a storage location. Angles were then measured to length, using a tape line, cut off and pulled aside, by hand.

A mechanical handling system and a mechanized stop for measuring lengths were finally designed to reduce pulling, walking and some lifting. A great deal of the hand burning was also eliminated, by the improved utilization of the shear. Cutting costs were reduced to less than $5.00 per ton.

On the powered roller table, slow application of power was needed initially to move angles through the rolls. To keep from damaging the stop, a braking effect was required as the maximum length was reached. Device finally selected was a foot lever-controlled variable speed transmission driving a shaft geared to the rolls. The foot lever is pushed down until the angle moves to a certain point, and then raised so that motor and transmission can brake the angle's travel. The stop, pushbutton controlled, is motor-operated. Distance from gage to shear is read directly on a revolution counter.[33]

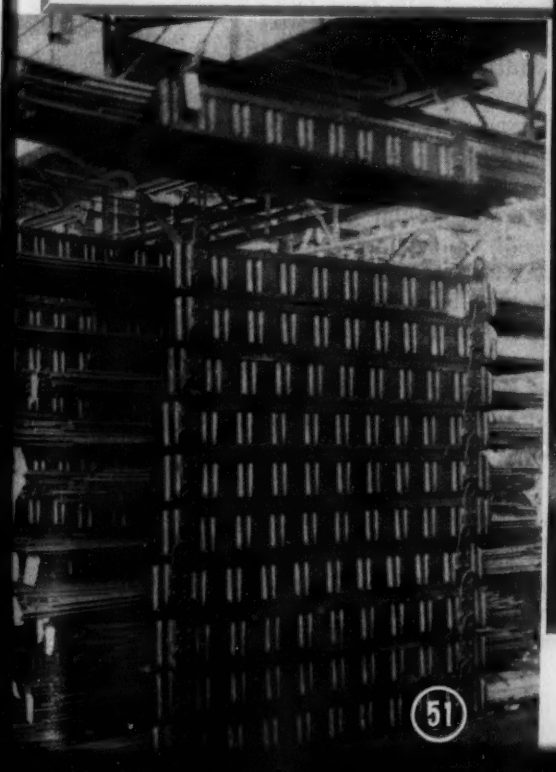
Another valuable handling device is an automatic spring-powered, wheeled rack which is really a combination unit for handling, storing and transporting parts. When used at a production machine, the rack maintains parts at the operator's hand level, eliminating any stooping and picking up. As soon as a piece is lifted off, the springs automatically compensate, raising the height of remaining parts on the platform. Conversely, when parts are loaded on the rack, the platform gradually sinks until the rack is filled and ready to be removed. The entire unit then can be rolled away to other processing machines or to temporary storage.

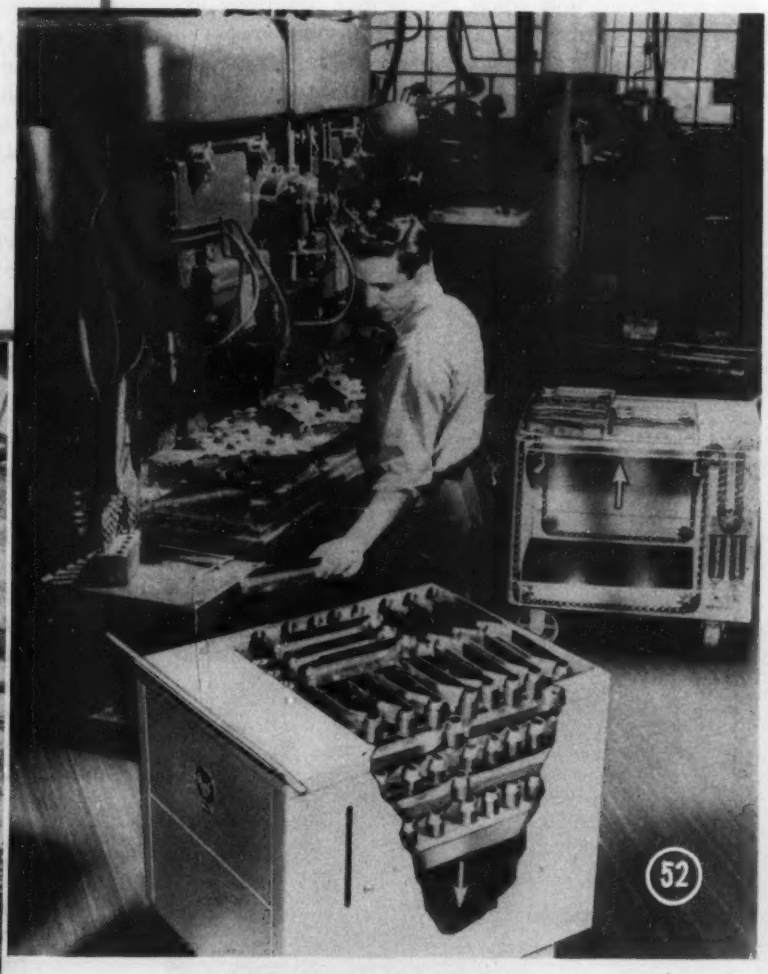
Fig. 49—Example of studied location of parts bins to save motions in reaching for parts during assembly operation. Bins are filled from back by stock clerks. Courtesy Yale & Towne Mfg. Co.

Fig. 50—Special purpose machine designed to remove coils of strip steel quickly from the mandrel of producing machinery. Courtesy Lewis-Shepard Products Inc.

Fig. 51—Steel bar rack skids permit handling and storage of unit loads of long bars or tubes. Courtesy Union Metal Mfg. Co.

Fig. 52 — Automatic spring-powered racks hold a bank of material and bring each piece to the operator's hand level as soon as the preceding piece is removed. Courtesy American Machine & Foundry Co.





REFERENCES

32. Robert C. Brady, chief materials handling engineer, Ingersoll Steel Division, Borg-Warner Corp., "Handling Unusual Shapes," presented at the Conference on Materials Handling, Cleveland, Jan. 15, 1948

33. Donald E. Farr, engineering supervisor, Methods Engineering Council, "Applications of Methods Engineering and Equipment Design to Materials Handling Problems," presented at the Materials Handling Conference, Philadelphia, Jan. 10-14, 1949

34. A. C. Farley, superintendent of warehousing and shipping department, Davison Chemical Corp., "Planning a Storeroom Operation," presented at the Conference on Materials Handling, Cleveland, Jan. 13, 1948

35. V. P. Uebelhoer, operations manager, International Harvester Co., Baltimore Parts Depot, "Industrial Construction to Fit the Job," presented at the Materials Handling Conference, Philadelphia, Jan. 10-14, 1949

FUNDAMENTALS OF STEELMAKING

NUMBER **9** OF SERIES

Another in a continuing series of articles on the making of steel and finishing it into products ready for the consumer. Each article is written by an outstanding authority in his particular field.

By CHARLES L. McGRANAHAN
Assistant General Superintendent, Pittsburgh Works
Jones & Laughlin Steel Corp.
Pittsburgh

Production of

HOT and COLD-ROLLED Strip and Sheets

The author in this second part describes the trip of a slab through the scale breaker, roughing stands, finishing stands, run-out tables, coilers and pilers of a modern continuous hot-strip mill. The hot Steckel mill is also described

PART II

SLABS, which have passed through the continuous heating furnaces, are conveyed by the furnace delivery tables, Fig. 9, to the first scale breaker whose primary duty is to loosen furnace scale sufficiently that it may be removed by means of hydraulic sprays working under at least 1000 pounds pressure. This is not a difficult job when the proper oxidizing atmosphere is maintained in the heating furnaces as impact of the slab against the delivery table bumper usually frees the scale from the main body of the slab. The scale breaker may be a horizontal edger which receives the slab on edge; a vertical edger which receives the slab in a horizontal position or a flat pass which receives the slab in a similar position. First two methods perform work upon the slab edges while the latter method reduces thickness of the slab in amounts varying from 1 to 15 per cent. Work upon the edges or surface of the slab breaks up furnace scale and hydraulic sprays, on either side of the slab, wash the scale into a trench under the mill tables where it is conveyed to a scale pit and reclaimed for use in blast furnaces or open hearth furnaces. A reduction in thickness of 3 per cent is usually sufficient to break up the scale, however, some mills employ heavier drafts to reduce the work on roughing stands or to elongate the slab previous to its being spread on the broadside mill. A two-high scale breaking stand employs rolls from 28 to 32 inches in diameter and up to 98 inches in length.

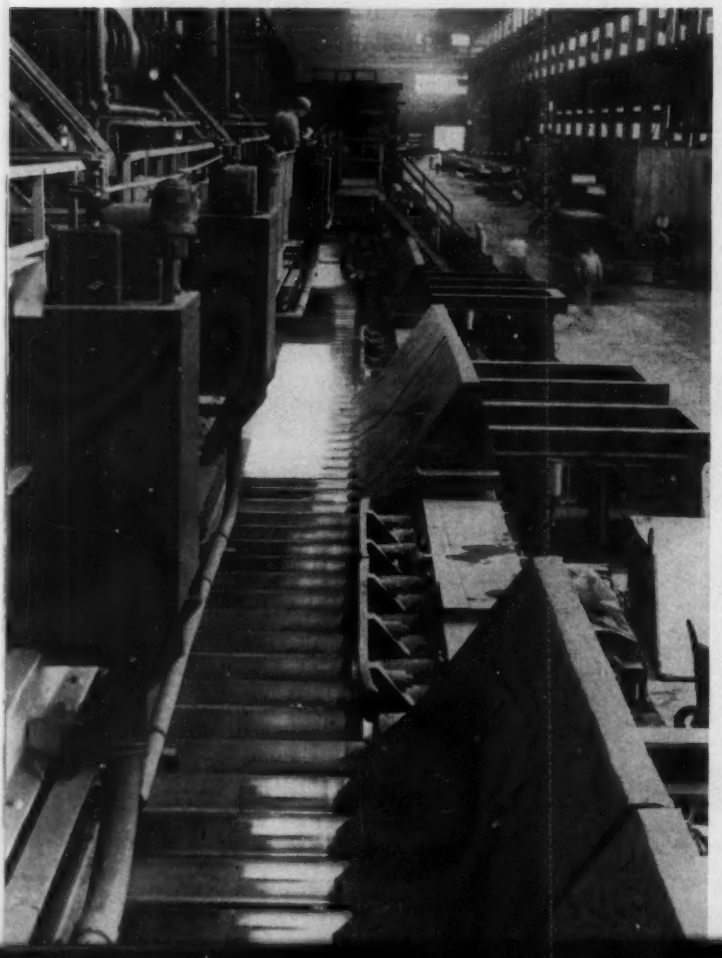


Fig. 9—Furnace delivery table and slab bumpers of a continuous strip mill. Mesta Machine photo

Where width of the hot-rolled section does not exceed the maximum slab width obtainable the first roughing stand is frequently a two-high mill, Fig. 11, with rolls 32 inches in diameter by about 60 inches in length. When it is desirable to produce sections considerably wider than the maximum slab width a four-high spreading or broadside mill, Fig. 12, is usually specified, however, mills up to 80 inches in width have been built with two-high broadside stands.

A broadside mill is equipped with a turntable on both sides of the mill and a pushing device on the entry side. After leaving the first scale breaker, the slab is picked up by the turntable, rotated 90 degrees and set down upon the mill table. A slab pusher ad-

Fig. 10 (right)—Processing chart covering operations from the ingot to the finished hot or cold-reduced sheet. Wean Engineering drawing

HOT STRIP FINISHING DEPARTMENT
INGOT FROM SOAKING PITS
SLABBING MILL
SLAB SHEAR
SLAB HEATING FURNACE
SLAB CONDITIONING
CONTINUOUS HOT STRIP MILL
COILERS
PILER
CUT UP UNIT
SHEAR UNIT
RESQUARING UNIT
BARREL STOCK LINE
TEMPER PASS
SIDE TRIM OR SLIT
SIDE TRIM & SHEAR
NORMALIZER
PICKLER
SCRUBBING UNIT
BACKED UP LEVELLER
RESQUARE UNIT
STRETCHER LEVELLER
TEMPER PASS
COIL OR SHEET TEMPER PASS MILL
CONTINUOUS ANNEALING & GALVANIZING UNIT
CONTINUOUS ANNEAL, PICKLE & SHEAR
SHEET SHEAR LINE
COLD REDUCED STRIP FINISHING DEPARTMENT
WHEELABRATER
PICKLER
SHEET GALVANIZING UNIT
CORRUGATING
SCRUBBING UNIT
LEVELLER
RESQUARE UNIT
STRETCHER LEVELLER
NORMALIZER
PICKLER
SCRUBBING UNIT
BOX ANNEAL
TEMPER PASS
SINGLE STAND REVERSING MILL
ELECTROLYTIC CLEANING
TRIMMING OR SLITTING & COIL
3 OR 4 STAND COLD MILL
BOX ANNEAL
BLUE ANNEAL UNIT
TEMPER PASS
SHEET SHEAR UNIT
SLITTING UNIT
CONTINUOUS GALVANIZING UNIT, HOT DIP OR ELECTROLYTIC
TIN PLATE DEPARTMENT
LEVELLER
RECLEANER
SLITTER
ASSORT & PACKAGE (BY HAND OR MACHINE)
OILING LINE
ASSORT
PACKAGE
SHEAR UNIT
ELECTROLYTIC CLEANING BOX ANNEAL
PICKLER
TINNING UNIT
DRY FEED, PICKLE, HOT DIP TIN, INSPECT, ASSORT & PACKAGE
SINGLE STAND REVERSING MILL
5 STAND COLD MILL
TEMPER PASS
SIDE TRIM & RECOIL
CONTINUOUS ELECTROLYTIC TINNING
SAME LINE CAN PRODUCE ELECTRO ZINC COATED STRIP
SHEAR UNIT
CONTINUOUS CLEANING & ANNEALING
SIDE TRIMMER (MAY BE BYPASSED)
CONTINUOUS STRIP PICKLING UNIT
CONTINUOUS PICKLING DEPARTMENT

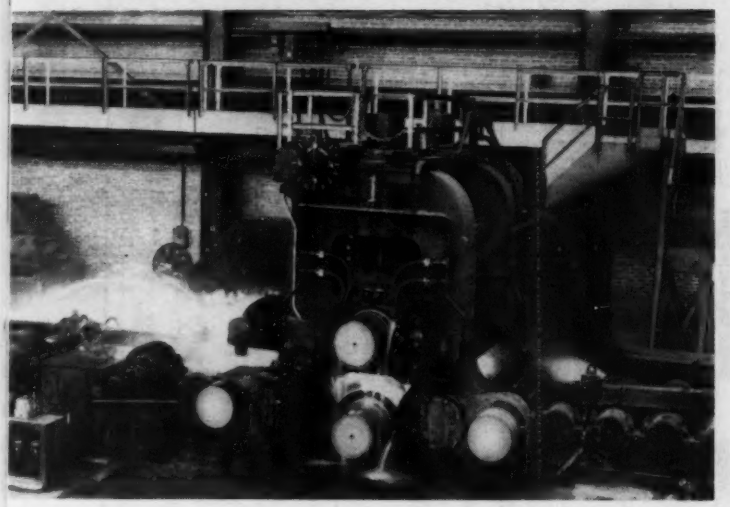


Fig. 11—Two-high mill with scale removal sprays on entry side. Mesta Machine photo

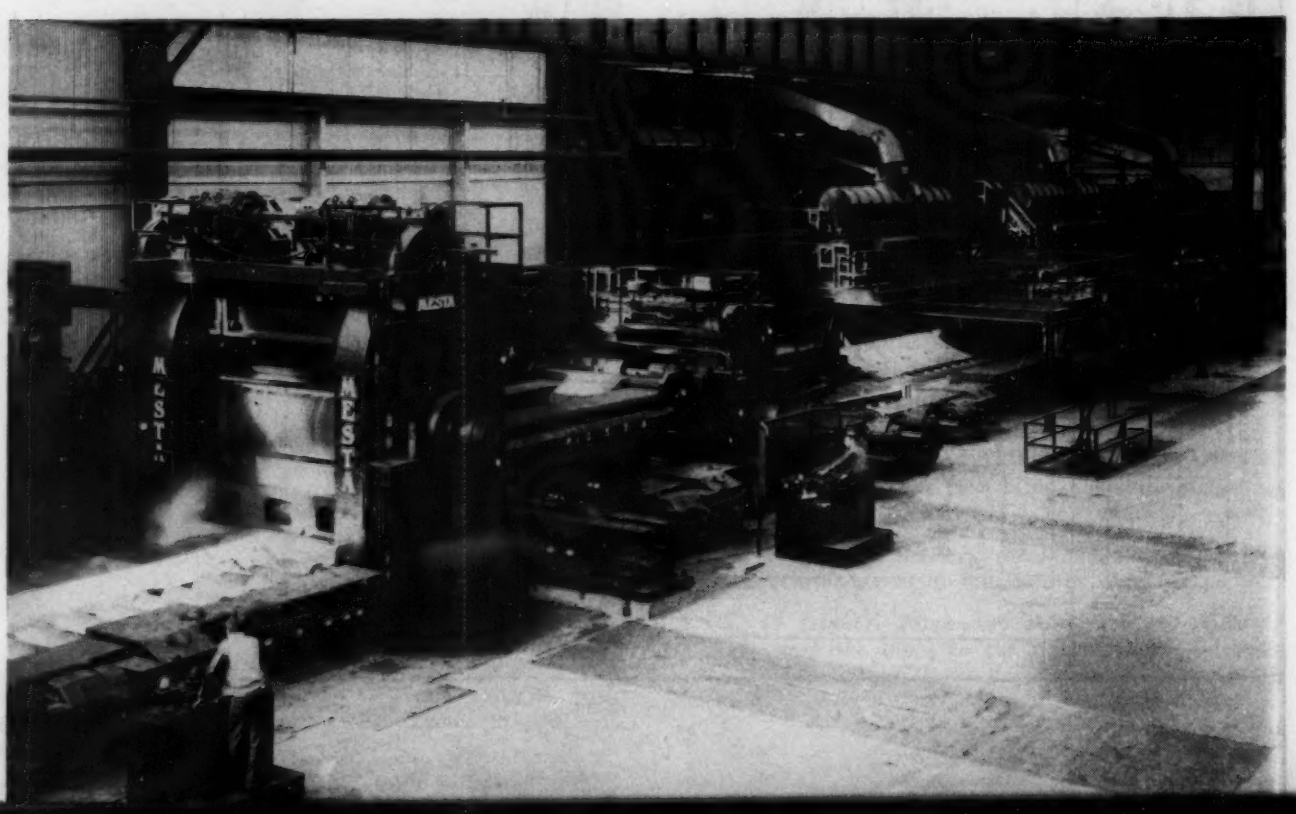
vances the slab into the working roll, thereby preventing slippage and insuring the rolling of a reasonably square section. As draft on the slab may amount to 45 per cent this is not an easy operation. Roll sizes of a 98-inch four-high broadside mill are as follows: Working rolls 38 inches in diameter by 98 inches long and backing-up rolls 53 inches in diameter by 90 inches long.

The slab, which has been cross rolled about 3.5 inches wider than desired section, is now rotated 90 degrees back to its original position and advances to a squeezer, Fig. 13. This device, which consists of a hold-down, an adjustable side guard and a movable head, is used to reduce width of the cross rolled slab to the desired section for the next three roughing stands. The movable head makes about a 7-inch stroke but reduces slab width an amount usually equal to the slab thickness, the hold-down preventing the slab from buckling. This operation produces a slab with reasonably straight sides otherwise the finished section would have narrow ends. The squeezer may be used to reduce width of short slabs when rolling straight away (i.e., not spread to width) thereby making possible the application of miscellaneous odd slabs.

The next three stands of the roughing train are spaced at such distances that the section is out of one mill before entering the next one. The second roughing stand may be either two-high or four-high, however, tendency is to provide four-high stands when the first stand is used as a broadside mill. These stands are provided with either integral or separate vertical edgers, Fig. 14, for controlling width and at least two of the three stands are provided with top and bottom hydraulic sprays for scale removal. The sprays may be located ahead of the vertical edging rolls and mill or on the mill's exit side. When installed on the delivery side of the mill only one of the two sets of sprays is normally used, depending on section thickness which in turn controls development of the secondary scale which rises during the rolling operation. Working rolls of the second roughing stand range from 28 to 38 inches in diameter for a four-high mill while stands No. 3 and No. 4 are in the neighborhood of 27 inches. Backing-up rolls are 53 inches in diameter by 90 inches long on a 98-inch wide hot-strip mill.

The roughing train is followed by a roller table usually designated as the delay table and whose function is an important factor in securing the clean blue surface, characteristic of properly produced hot-rolled sheets and strip. It became apparent in the early days of development of the continuous strip mill that it was impractical to completely finish a strip without a secondary scale rising in the finishing train. It was soon discovered that if the section was slowed

Fig. 12—Two-high scale breaking stand, slab pusher and spreading stand of a wide strip mill. Mesta Machine photo



Solid Brass combined with steel and aluminum in this quality lock set

Sargent Pin Tumbler Door Lock, in the 4500 Line of Precision-Built Lock Sets. Includes locking button in center of inside knob, and automatic deadlock. Made by Sargent & Company, New Haven, Conn.

Parts of the Sargent 4500 Line Lock Set. All exposed and most working parts are solid brass. Other metals include seamless steel tube, pressure cast aluminum, steel springs and lock washers. Steel parts are rust-proofed.

It is a fixed policy of Revere, expressed through its Technical Advisory Service, to recommend the most suitable materials for each application, whether or not supplied by Revere. An outstanding example of this practice is to be seen in the Sargent 4500 line of Precision-Built Lock Sets, a new line of exceptional beauty, security, convenience and long life. Revere and Sargent collaborated closely on this and other Sargent products.

The lock sets have a number of important advantages. One is the self-aligning feature; there is an aligning tube of pressure-cast aluminum which makes it independent of the door for proper functioning. The case is a seamless steel tube, copper brazed to the front support plate. The solid brass lock mechanism has been simplified to achieve a small cross bore, permitting gracefully-designed knobs and roses in the proper proportions. The roses, incidentally, are applied without the usual screws, and there is no set screw in the knob. A new principle permits the knobs to project the same distance on each side, regardless of door thickness. The lock set is available in five different functions, each requiring the same size holes in the door, for the economy of standardized installation.

All exposed parts are brass as are many of the other parts—solid brass, the quality metal that assures permanent service and good looks in hardware. Revere is proud to be an important supplier of fine brass in the hardware industry, as well as to manufacturers generally . . . The Technical Advisory Service is always at your service, ready to give unbiased suggestions on materials, design and fabrication.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

• • •

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.

Sales Offices in Principal Cities, Distributors Everywhere.

Fig. 13—A spread slab being squeezed to rolling width. Mesta Machine photo

down sufficiently after the roughing operation to permit a scale to rise, then remove this scale with a hydraulic spray before finishing, a sheet or strip free of rolled-in secondary scale and with an excelled uniform tight-blue oxide, was secured. The table is provided with variable speed motors in order to synchronize it with the second scale-breaker.

A cropping shear, Fig. 15, is usually installed at the end of the delay table whose function is to square up the end of the section before entering the finishing train. This operation corrects any out-of-square ends which may have been produced at the blooming while shearing the slab or which may have been the result of slippage when spreading for width in the broadside mill. Unless these ends are removed, cobbles are likely to be produced in the finishing stands and in the coilers, and the lighter the finished gage, the greater is the hazard of such occurrences. Tail end of the section may be removed at this point, however, some operators prefer to cut it off with the flying shear adjacent to the last finishing stand as total scrap removed may be somewhat less with good shearing practice.

The second scale breaker, Fig. 15, located at the end of the delay table and midway between the cropping shear and the first finishing stand, is frequently a duplicate of the first scale breaker except for the following differences; it must be of the same roll length as the finishing train, it must be driven by a variable speed motor to match the speed of the first finishing stand, and it is seldom if ever used to take any reduction in thickness of the section. In the true sense of the work, this unit is not a scale breaker but is merely a set of pinch rolls which controls the section or bar speed through the hydraulic sprays which are located on the entry side of the finishing stands. The bar must pass through the scale removal sprays at the same speed as the entry speed of the first finishing stand, otherwise there will be a variation in temperature in the bar and a resulting variation in thickness and appearance of the finished section. A number of mills operate successfully with only a pair of pinch rolls at this point.

Appearance of finished hot-rolled strip and its suitability for further processing is dependent, to a great extent, on the proper functioning of scale removal sprays located at this point. The spray equipment consists of a top and a bottom manifold, upon which are located a series of spray nozzles, each of which contains an orifice about ½-inch long by 3/64-inch wide. Nozzles are spaced about 4¼ inches on center, at a 15 degree angle with the vertical and 12 inches from the strip. The jet which impinges on the bar surface will be about 7 inches in width. The nozzles are rotated on their axes so that overlapping jets do not touch, otherwise, light streaks of secondary scale will form in the finishing train which are not conducive to good surface in the finished sheet or strip.

The finishing train proper, Fig. 16, usually consists of six four-high roll stands, however, combinations of four or five stands are in use, the number of stands used being a function of the thickness of the desired finished gage. It is apparent that final thickness is governed by the number of stands used, since overdrafting of the stands will only result in distorted sections and inferior surface quality.

Finishing stands are spaced about 18 feet apart and provided with loopers between stands rather than with roller tables. This device consists of a pair of arms upon which a roller is mounted. The arms are

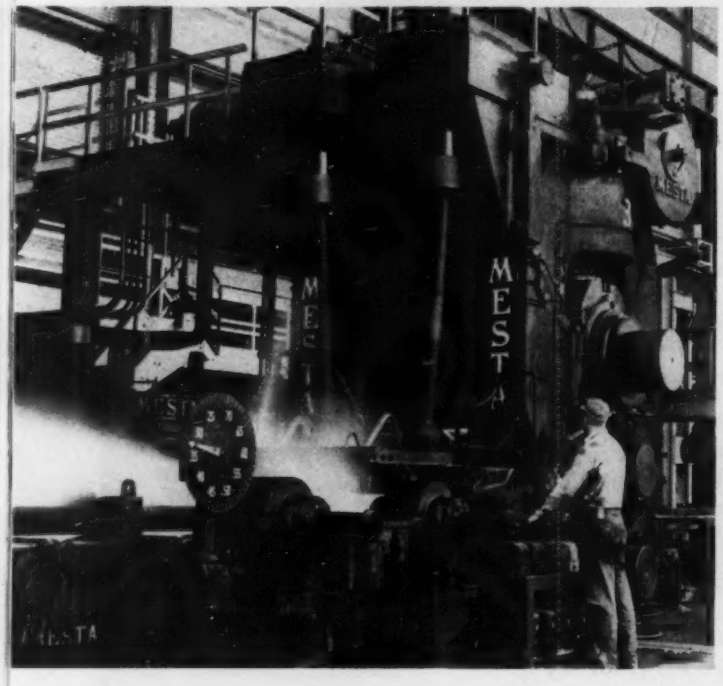
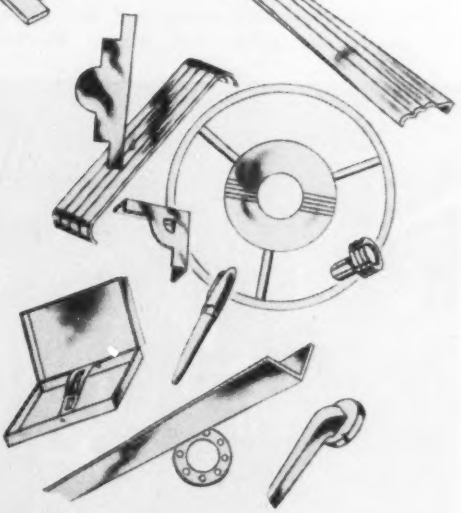


Fig. 14—Universal roughing stand with scale removal spray on entry side of mill. Note C-hook for changing back-up rolls hanging on structural support beyond delivery side of mill. Mesta Machine photo

Interested in improving your products? Want your sales curve to keep you comfortably over the "break-even" point? Then take a look now at CMP's exclusive bright annealed 18-8 stainless and other chrome-nickel grades Thinsteel. The superior corrosion-resistance advantages it provides in combination with its unusual mirror finish — even in dead soft temper — are obvious. At once you can see its cost cutting help — quite an important saving alone in finishing and polishing costs. Arrange for delivery of sufficient sample material to give you a picture of its full money making potential. We'll give your inquiry immediate and interested attention.



CMP THINSTEEL

CMP STRIP STEEL — PRECISION COLD ROLLED

the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

NEW YORK • CHICAGO • DETROIT • ST. LOUIS • INDIANAPOLIS • LOS ANGELES

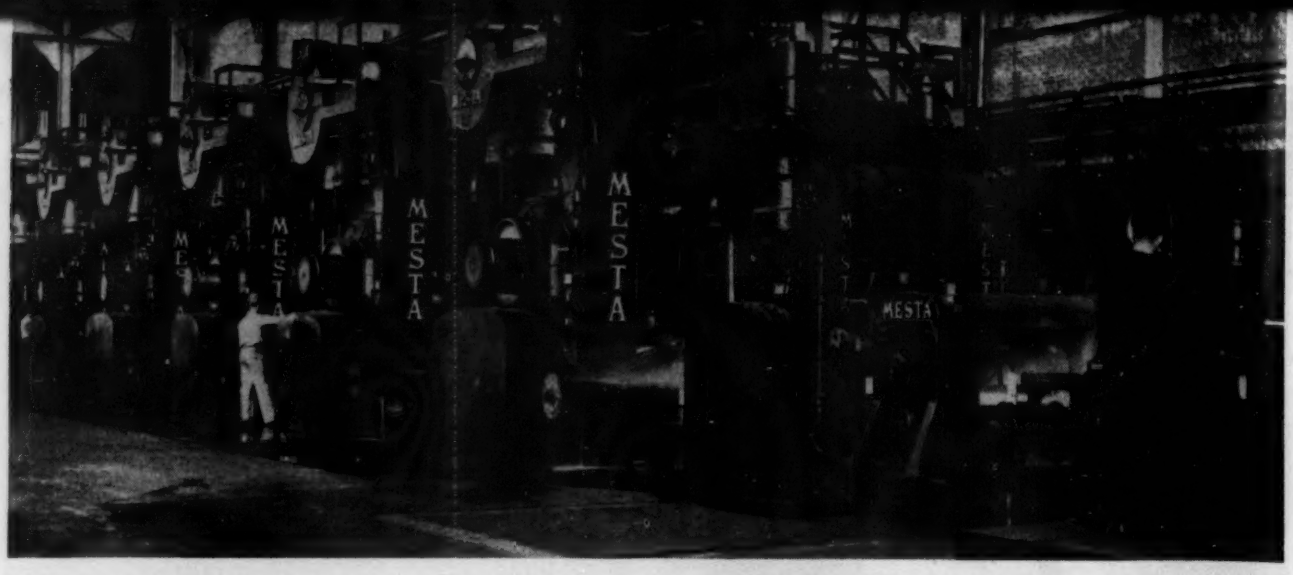


Fig. 15—Cropping shear located on entry side of two-high scale breaking stand. Mesta Machine photo

HOT and COLD-ROLLED
Strip and Sheets

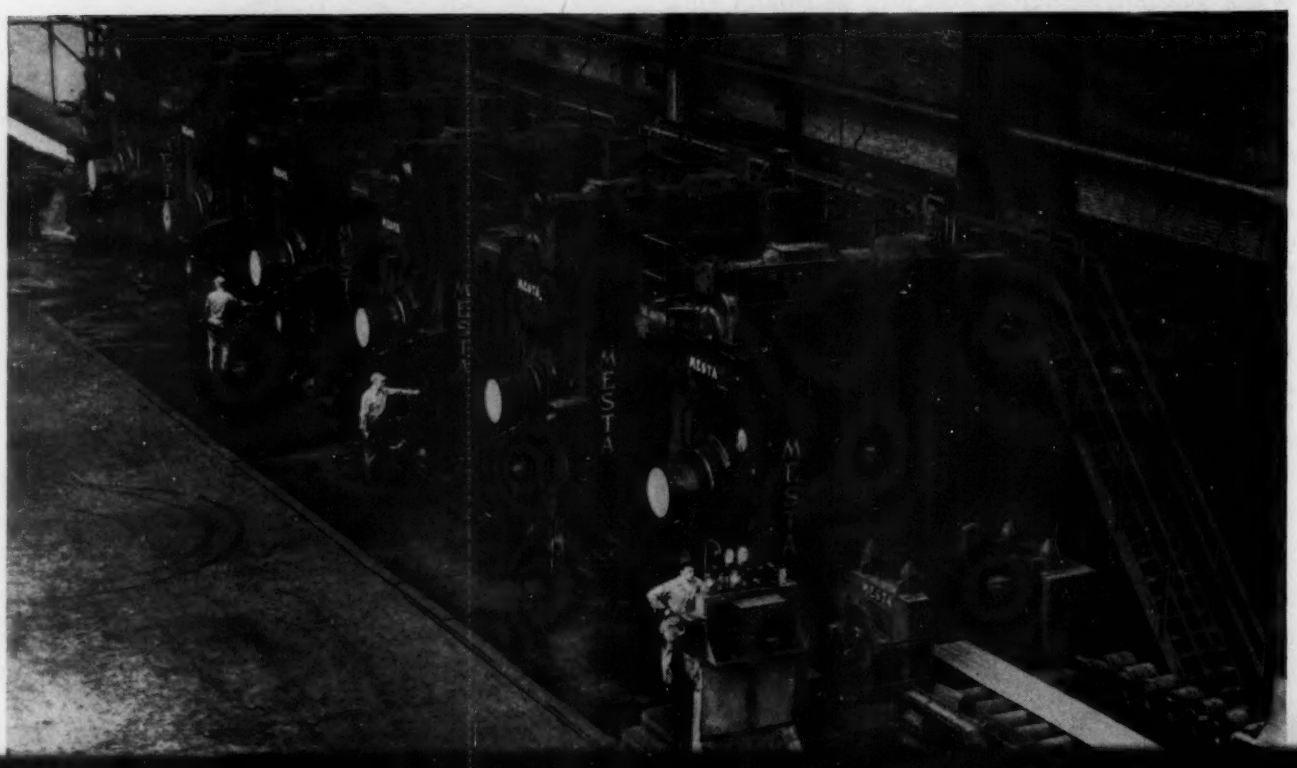
rotated vertically by a motor or an air cylinder, thereby taking up the slack in the strip as it passes from stand to stand. The loopers are not used continuously after the first few bars of a given section are rolled but remain idle, at the discretion of the operator.

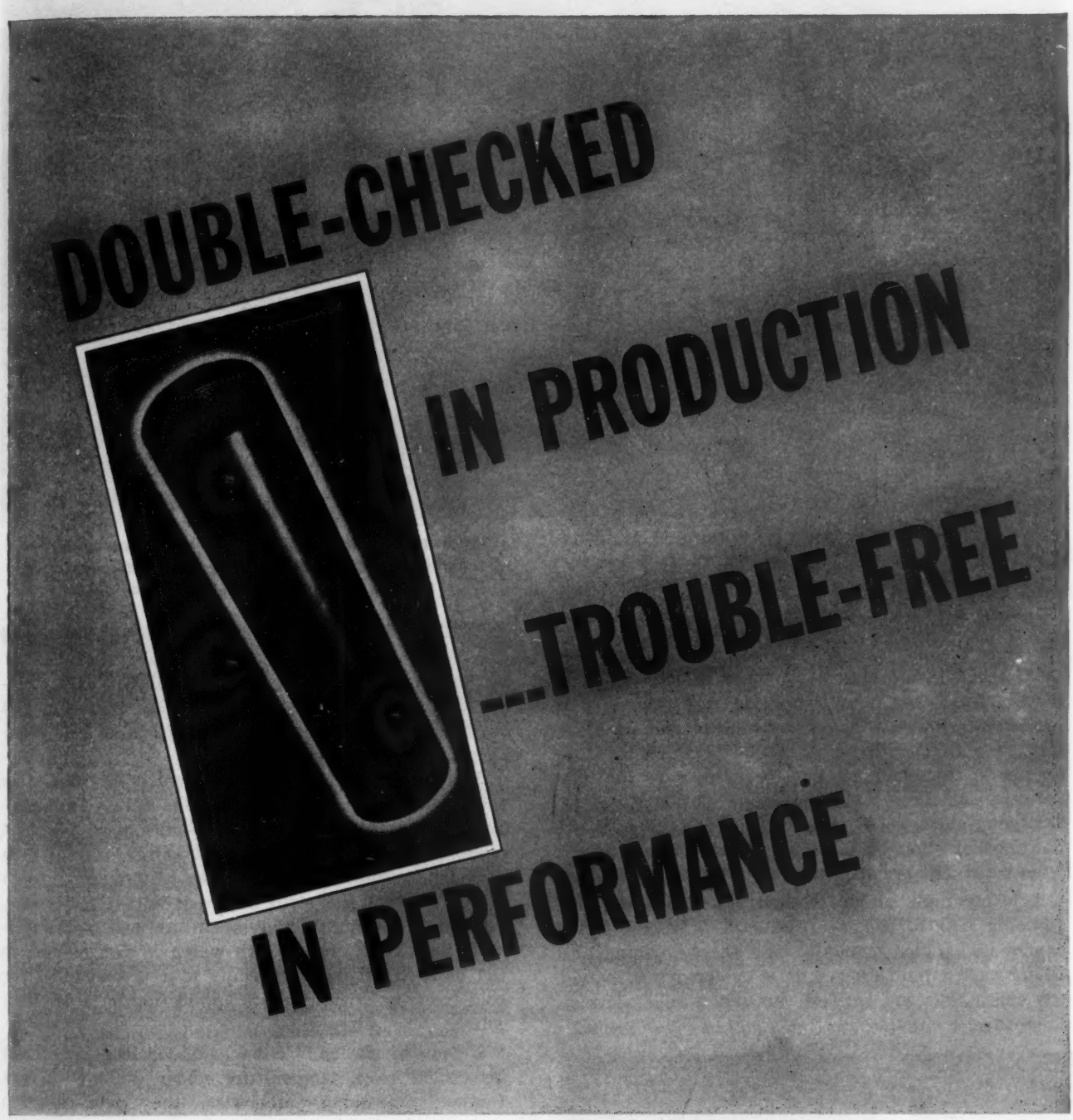
Each stand of the finishing train is driven by a variable speed motor with a speed ratio of about 2 to 1. Reduction gears are used on most of the drives and a pinion stand is used for driving the top and bottom working roll of each mill. Finishing train motors vary from 3000 to 5000 horsepower depending on the mill width and most installations have a maximum delivery speed of 2000 feet per minute, although 1800 feet per minute is about the top practical speed on broad strip mills.

Product of the hot-strip mill may be disposed in one of the following ways: 1—Cutting to length by a rotary-type flying shear located near the last finishing stand, then conveying over the runout tables to a piler located beyond the coilers. This operation is usually limited to 13 gage and heavier. 2—Rolling to a length shorter than the hot-bed, over which it passes to adjacent table lines equipped with roller leveler, parting shears, transfer table, etc., as outlined earlier for the handling of plate. 3—Conveying the strip over the runout table to up or down-coilers where it is coiled and transferred to a cooling area for further processing.

The rotary flying shear, Fig. 16, is located about 12 feet from the last finishing stand and in its most practical form consists of two drums of different diameter, each drum carrying a single knife. The gearing is such, that the smaller top drum makes four revolutions while the bottom drum makes three, thereby matching up the two knives and making a cut. The shear drums are synchronized with the last finishing stand and permit cuts of various lengths to be made by increasing or decreasing drum speed. Starting and stopping of the shear can be effected by manual control or may be actuated by load relays on

Fig. 16—Finishing train and hot flying shear of continuous strip mill. Mesta Machine photo





Every International graphite electrode and nipple is manufactured according to rigid specification standards . . . from mixing raw materials to boring and threading the finished product, tested and checked again and again to maintain constant high quality. It is this careful control that assures trouble-free performance so characteristic of International electrodes.

Specify "International" to be sure of getting the best graphite electrode money can buy.

Graphite Products for Electrothermic and Electrolytic Applications.

International GRAPHITE AND ELECTRODE CORP.

ST. MARYS, PA.

4764

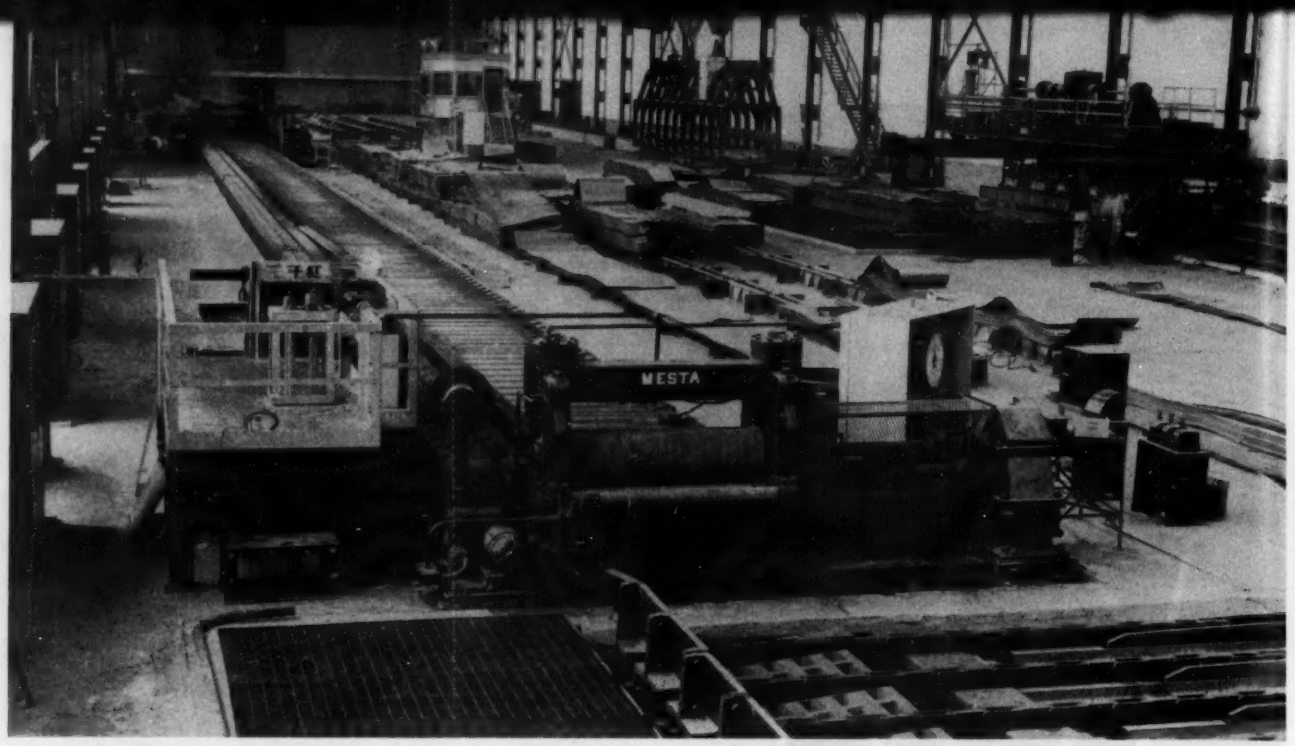


Fig. 17—Runout table, pinch rolls and piler for handling sheets which have been cut to length on the hot flying shear. Mesta Machine photo

HOT and COLD-ROLLED
Strip and Sheets

the various finishing-stand drive motors. Cutting range of the shear just described varies from 16½ to 33 feet with an accuracy of plus or minus 1-inch, however, it is the best practice to make the cuts as long as possible, i.e., in several multiples of the shipping length, and to allow about 6 inches over in length on each multiple cut to compensate for temperature shrinkage and resquaring. Cut lengths from the flying shear pass down the run-out table over the down coilers and on to a piler and scales, Fig. 17, from which they are removed and stocked for cooling.

A heavy gage, coupled with a wide width and long shipping length, usually results in a weight which cannot be handled manually on a sheet finishing line. Under such circumstances, it is customary to handle the sheet over the hot-bed through a roller leveler, rough cut to approximate finished length, pile and cool for finishing on a heavy duty finishing line, Fig. 18, or continue on along the table line through a rotary side trimming unit, then a second leveler, and finally an end shear and piler where it is ready for shipment.

Most efficient method for disposal of the hot strip mill product is by means of hot-coilers, Fig. 19, usually two in number. Preferred coiler location is a point about 360 feet from the last finishing stand. Such a layout permits the use of ample top and bottom sprays to cool the strip before it enter the coilers, otherwise, the high coil temperature will cause self-annealing and grain growth which is detrimental to the finished product, especially if it is scheduled for cold reducing with ultimate application on a drawing job.

Hot-rolled sheets in cut lengths or in coils should be cooled to a temperature under 200° F before further processing, otherwise, they will develop cross-breaks in the roller levelers on the processing line or in the decoiler. This defect will result in a coarse surface and possible breakage if the sheet is used for drawing purposes and there is no known method for its correction. If cold-rolling is used to improve flatness, accelerated age-hardening takes place and this is objectionable for many applications of hot rolled sheets. A safe rule is that the sheet should be sufficiently cool so that the hand can be placed upon it for 20 to 30 seconds without discomfort.

Initial cost of a 10-stand continuous hot-strip mill or even a semi-continuous mill consisting of a re-

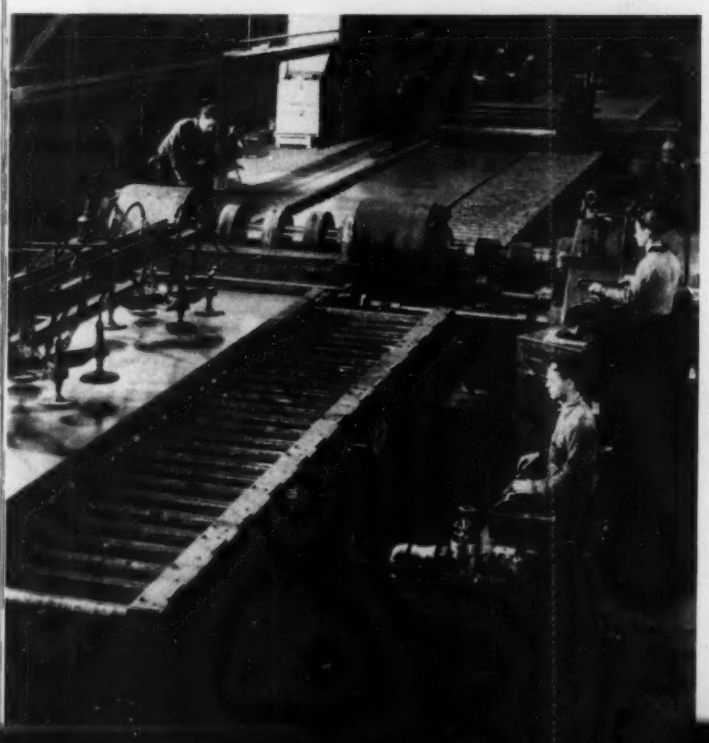
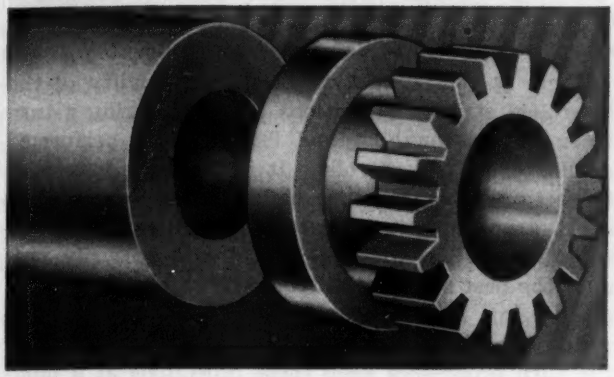
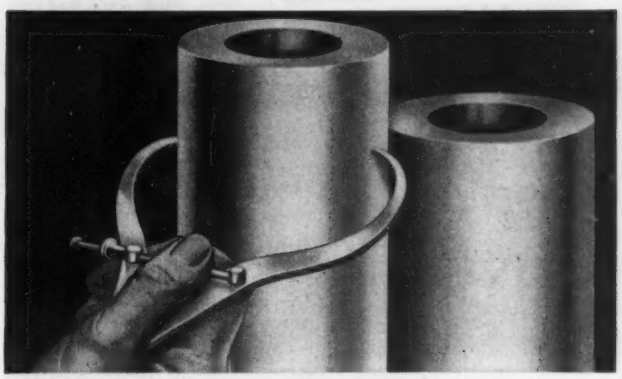


Fig. 18—Cutting-up line for heavy sheets and light plate which consists of a vacuum charging car, tables, side trimmer, slitter, roller leveler, end shear and piler. Mesta Machine photo

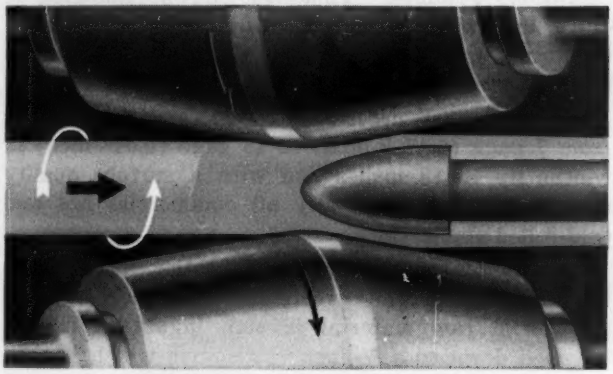
How to cut production costs and improve quality with TIMKEN® tubing



YOU SAVE MATERIAL COSTS, machining time, and boost production when you make cylindrical parts from Timken® seamless tubing instead of bar stock. There's no center hole to drill . . . less stock to machine. Boring is eliminated or reduced to a rapid finishing operation.



OUR TUBE ENGINEERING SERVICE makes possible even greater savings, because it will select the most economical tube for your job—guaranteed to clean up to your finished dimensions. This service has proved so valuable to parts makers that 90% of Timken seamless tubing is now bought on this basis.



BASICALLY A FORGING OPERATION! In the piercing of Timken tubing, red hot billets are worked between the rolls with a spiral, kneading action that gives a uniform spiral grain flow and refined grain structure. The result is uniform, fine forged quality from one end to the other in every tube.

All you have to do is give us this information:

1. **FINISH MACHINED DIMENSIONS,** i.e.—The maximum machined O.D. x minimum machined I.D. x length. A blueprint is most desirable. Dimensions should include applicable tolerances. If only finished ground dimensions are applicable or available this should be noted.
2. **MACHINING**—Is part held on O.D. or I.D. during the initial machining operation? Complete sequence of operations when practical.
3. **FINISH OF TUBING DESIRED**—Hot Rolled, Cold Drawn, Rough Turned, Roto-rolled or Centerless Ground.
4. **CHEMICAL ANALYSIS AND OTHER SPECIFICATIONS.**

FOR AN ANALYSIS OF YOUR REQUIREMENTS, send the data indicated above. No cost or obligation. And ask for our informative booklet, "Facilities and Products". The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

50th birthday of the company whose products you know by the trade-mark: TIMKEN

Specialists in alloy steel—including hot rolled and cold finished alloy steel bars—a complete range of stainless, graphitic and standard tool analyses—and alloy and stainless seamless steel tubing

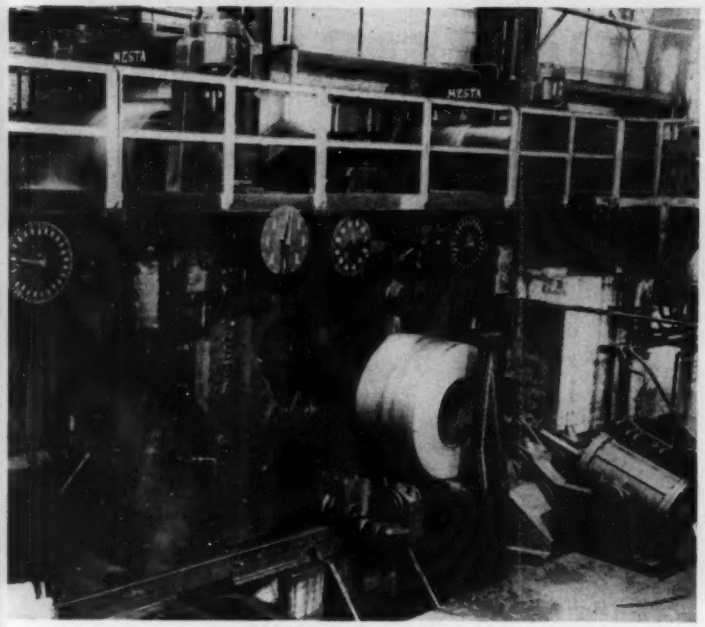


Fig. 19—Down-type coiler on a continuous hot-strip mill. Mesta Machine photo

versing roughing stand and four finishers was of such proportion that many small steel companies could not secure the advantages that were to be gained by rolling large slabs into broad light gage strip in long lengths. Steps were taken to solve this problem and they culminated in development of the Steckel-type hot mill in 1932.

This type of mill is built in several forms but essentially it consists of a heating furnace, a two high or a vertical-edging mill for scale breaking, a single-stand reversing mill with separate or integral edging rolls, two hot coiling furnaces, two sets of pinch rolls, approach and delivery tables and a coiler.

Fig. 20, illustrates a mill of this type, except of four-high construction, which has operated so successfully since 1935 that a second unit of wider width and more modern design is being installed during 1949.

Slabs, measuring up to 3 x 18 inches by 25 feet long are heated in an oil fired slab heating furnace with a capacity of 15 tons per hour and delivered to the mill approach tables where they are conveyed through a scale breaking unit to a single stand two-high reversing mill. The slab is broken down to about a 7/16-inch thickness in the conventional reversing mill manner, after which an apron plate under one of the coiling furnaces is raised and the strip on the next pass is deflected into the oil fired furnace which is maintained at about 1600° F. A rotating alloy reel coils the strip until the tail-end reaches pinch rolls adjacent to the furnace when the mill, pinch roll stand and reel are reversed and the operation resumed, the coiling being performed in the opposite furnace. Function of the pinch rolls is to enter the strip's leading end into the mill after the reel is reversed. From four to five passes are required to reduce the slab from 3 inches to ⅜-inch which is the thickness of the strip on entering the first coiling furnace. A similar number of passes are required to bring it down to finished gage, after which the deflection plate is dropped on the mill's exit side and the strip passes over the runout tables to the coiler.

The reversing mill is equipped with 21½-inch diameter by 20-inch long working rolls which are driven by a 1500 horsepower variable speed motor with a speed of 250 to 500 revolutions per minute. Delivery speed is from 430 to 935 feet per minute.

There is some variation in surface quality of the hot-rolled strip as operations continue during a turn inasmuch as roughing and finishing are performed upon a single set of rolls. It is therefore necessary to use a type of roll that will withstand a considerable variation in temperatures to which it will be subjected and such a roll does not necessarily produce the best surface that could be obtained from the steel being rolled. Careful judgment in changing rolls and selection of type of order to be rolled as the turn progresses keep these objections at a minimum. It is customary to schedule the first 50 slabs after a roll change for application on hot-rolled orders as the surface is then at its best. The next 50 slabs are applied on orders requiring cold reduction as this operation can be so conducted as to heal up certain surface defects. Rolls are then changed and operations resumed. Time lost in roll changing is quite small when compared with other delays incident to normal mill operation and should not exceed 10 minutes per change.

The mill just described, produces strip ranging from 7 gage (0.1799-inch) to 18 gage (0.048-inch) in widths up to 18 inches and with a surface quality satisfactory for practically all commercial hot and cold-rolled applications.

Success of this mill has caused the operators to install a second unit of similar design except that the initial raw material is slab ingots which are bloomed down to a ¾-inch thick strip which is then delivered to the single stand four-high reversing mill.

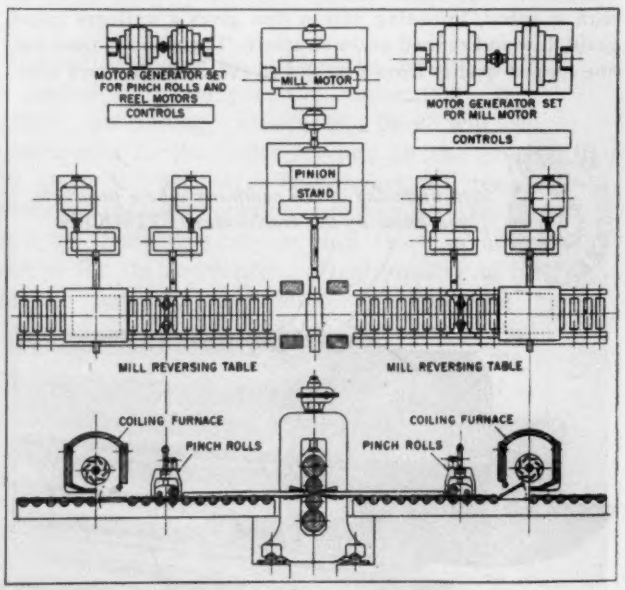


Fig. 20—General arrangement of a Steckel-type hot mill

Equipped with working rolls 25 inches in diameter by 42 inches long and backing-up rolls 49 inches in diameter, this mill will produce strip up to 36 inches wide with gage down to 0.048-inch (18 gage).

A somewhat similar installation is being erected in the Pittsburgh district and will be in operation by midsummer of 1949. This layout consists of 10 "in and out" heating furnaces, a 32 x 72-inch two-high broadside mill, a 32 x 69-inch two-high universal mill (separate edger), a slab shear, a 27 x 49 x 66-inch four-high reversing stand, two hot coiling furnaces, mill tables, slab piler and upcoiler.

It is proposed to start with ingots up to a maximum of 24 x 54 x 69-inch, weighing up to 25,000 pounds and roll same into slabs 15 to 18 feet long, 3 to 7 inches thick, and 18 to 50 inches wide. Slabs will be recharged into the heating furnaces, reduced to about 1-inch on the universal mill and delivered to the Steckel-type hot mill for finishing. Some idea of the massiveness of the reversing stand may be gained from the fact that it will be driven by a 5000 horsepower motor of 0/70/170 revolutions per minute.

Possibilities of the Steckel-type hot mill have been recognized in foreign countries and several installations have been completed or are under way.

Processing of strip produced on Steckel-type hot-mills does not differ materially from that produced on a continuous strip mill except that care must be exercised during pickling and cold reducing operations to see that surface defects are healed and not aggravated.

(*To be continued*)

ARC WELDED DESIGN

. . . used advantageously on farm implements

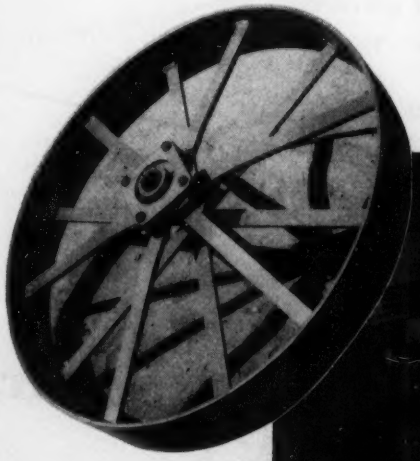
ADVANTAGES of arc welded steel construction are currently being exploited by Towner Mfg. Co., Santa Ana, Calif., in the production of tillage tools and other earth-breaking farm implements. One recent step in this direction was the design of a hydraulic ram used on many implements for raising and lowering the tools.

A flange is welded to a piece of shelby tubing, an end plate of plow steel is put on the other end and with the addition of two brackets and a pipe nipple, the ram is complete except for machining. All welding is done on Lincoln Electric machines using an E6010 type electrode. This electrode is used because of the deeply penetrating qualities of the welds it deposits and high strength it achieves in joints of the ram.

Another example of this type of approach to manufacturing problems is presented in the design of a dog box to fabricated steel. The dog box is used to regulate the angle of cut on the gangs of an offset harrow. Costs were reduced and weight cut from 7 to 6 pounds.

Fig. 1 presents the redesign of a wheel that had become both expensive and obsolete. Plain mild steel hub, spokes and rim are welded into a simple wheel. Parts are first tack-welded in a fixture and then removed and finish welded. For this operation an E6012 electrode is used because the fit-up of the spokes is not uniformly close to the hub and rim.

Welder in Fig. 2 is welding the frame for a disk harrow. Many fabricating economies are possible when parts such as this frame are made with arc welding. This simple trunnion-mounted welding jig revolves so that all welding can be done in the fastest downhand position.



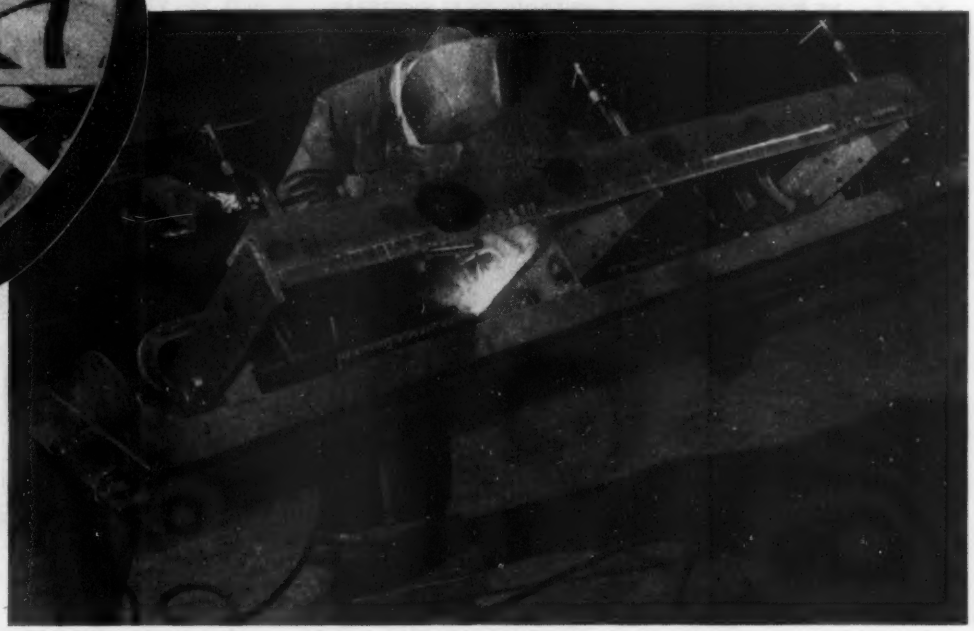


Fig. 1 (above) — Welded all-steel wheel

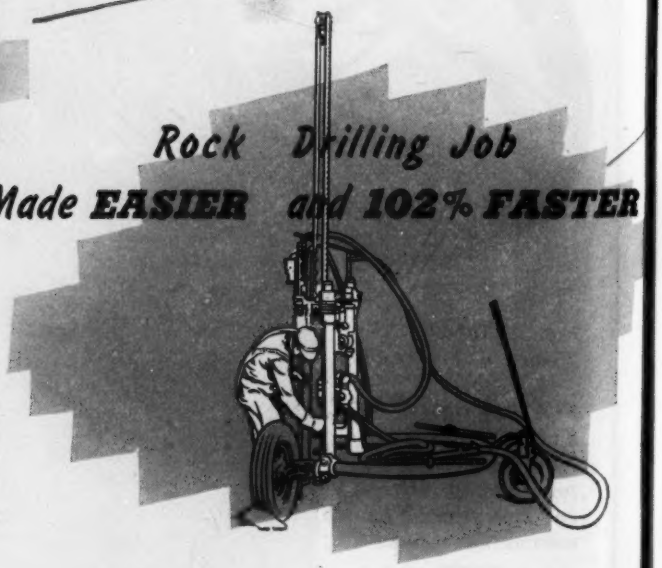
Fig. 2 (right) — Simple trunnion-mounted welding jig for welding different size frames for cultivating implements

AIR POWER

Drilling Job
Made ***EASIER*** *and* ***86% FASTER***

Screw Driving Job
Made ***EASIER*** *and* ***67% FASTER***

Rock Drilling Job
Made ***EASIER*** *and* ***102% FASTER***



These examples show the time in which typical I-R AIR POWER EQUIPMENT paid for itself in actual use because AIR TOOLS enable the workman to produce more with less effort.

makes jobs Easier

with equipment that pays for itself nearly twice as fast today!

Air Power makes jobs easier because Air Tools are light, fast, less tiring to use, take less effort to handle and control.

Since Air Tools enable the workman to produce more with less effort, it is easy to speed operations, and get more production. At the same time, under today's conditions, Air Power equipment pays for itself almost twice as fast as it did a few years ago.

For instance, drilling holes for cover lugs of pressure cookers is 86% faster in one plant now that I-R Air Tools are used.

Driving hundreds of screws into railroad cars is much easier, and 67% faster, with Air Power at work.

Rock is drilled 102% faster, with less operator fatigue, when I-R Air Power equipment is on the job.

Ask your I-R branch office to arrange for a job study in your plant. Actual tests of Air Tools and Equipment will be made on your own operations, so you can determine definitely how much you can save in production costs, and the period of time in which recommended equipment will pay for itself.

AIR POWER
The Key to Lower Production Costs

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

318-B

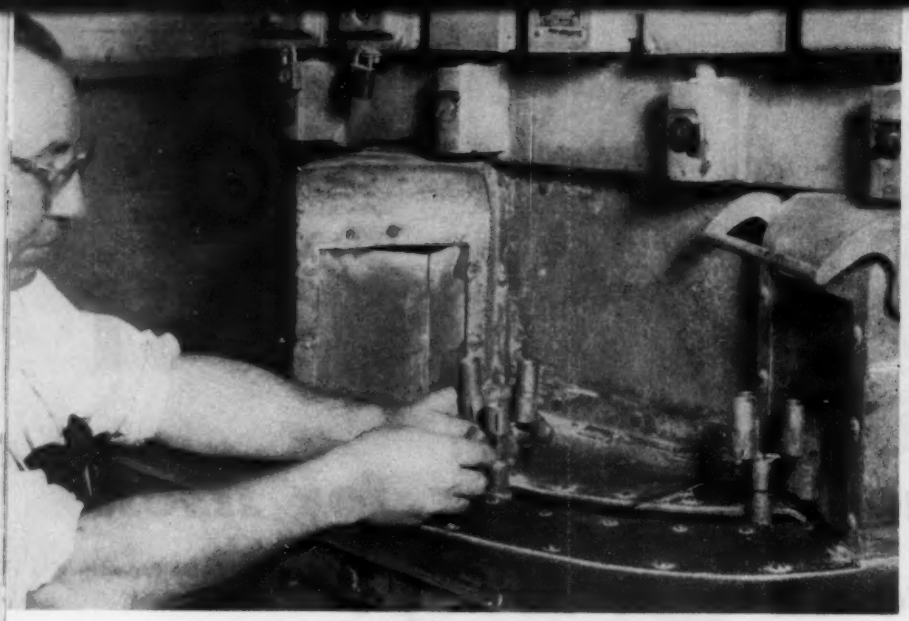


Fig. 1—Loading parts to be vapor-blasted in carriers on spindles that turn on their own axes as they are advanced by the turntable through a close chamber and under the blasting nozzles

Vapor Blasting

PRECISION PARTS

Steel parts for diesel fuel injection pumps are deburred quickly and effectively, using air under 100 psi pressure and a water-grit mixture, in a rubber-lined barrel

IN THE manufacture of high-precision steel parts for diesel fuel injection pumps, it is essential that fine burrs, left on parts after rough machining and heat-treating, be removed. To do all such work by hand would be slow, tedious and costly, so much of it is now being done by vapor blasting, in the units, here illustrated, at the International Harvester Co.'s Milwaukee plant. The department using this equipment builds diesel injection pumps on a large volume basis.

For one type of blasting operation, Fig. 2, the parts are placed in a rubber lined barrel which is rotated slowly as the blast, entering an opening on the axis of rotation, is applied. Blasting is done with a mixture that, for each 10 gallons of water, contains 40 pounds of No. 80 grit and 15 pounds of a finer abrasive, No. 325 grit. This mixture is agitated and recirculated continuously through the barrel from a sump into which the barrel drains.

The blast is created by air at a pressure of 100 psi fed through a nozzle along with the water-grit mixture. Fifteen to 20 minutes per batch are required to accomplish the desired burr removal. Motion of the parts in the barrel, which is located in a booth, is sufficient to bring all surfaces to be blasted into contact with the blast. For loading and unloading, the barrel is wheeled out of the booth along a track on which one component of the blasting equipment also moves.

Besides having burrs removed, surfaces of parts undergo a desirable scouring action. After washing and drying, most of the parts blasted are precision ground and many are subjected to honing or lapping or to both operations.

Fig. 2—Setup for vapor blasting parts for diesel injection pumps after rough machining. During blasting, done by air and a wet abrasive mixture, the parts are slowly tumbled in a rubber-lined steel barrel

Another vapor blasting machine, Fig. 1, is employed for removing fine burrs from injection pump parts which cannot be put through the first machine because they might be marred by impacts in a tumbling barrel. No nicking can be tolerated and it is avoided in the setup that is shown in Fig. 1.

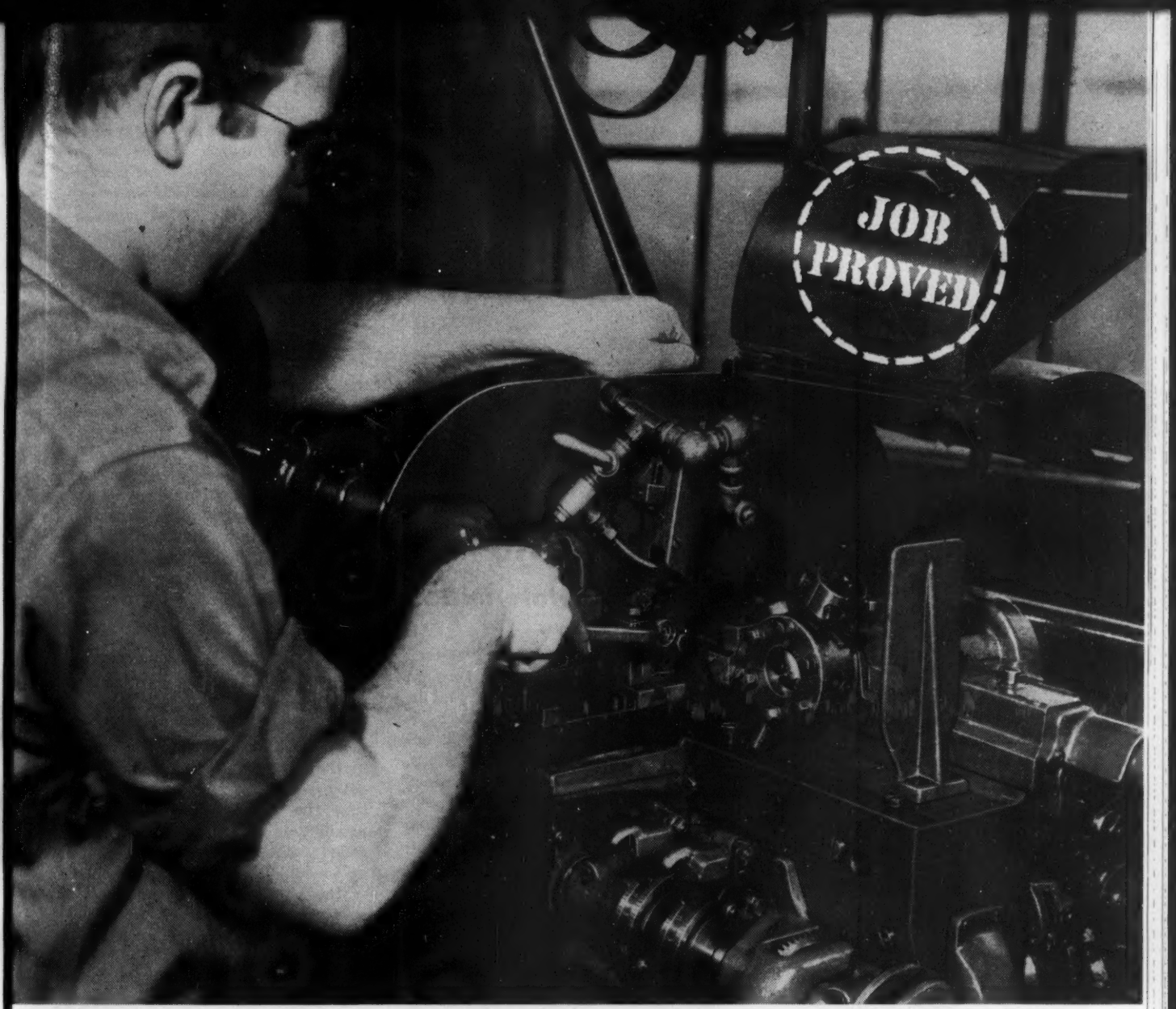
This machine has a table equipped with vertical spindles that turn slowly on their own axes as they are carried through the blasting chamber by the turntable. The time cycle can be varied and is set for the particular part in process, depending upon its size and shape. Each spindle has a holder designed to fit the part blasted.

Holders Rotate Under Nozzles

As the holders are advanced through the blasting chamber, they rotate directly under the blast nozzles which are so set that the blast strikes the areas to be deburred. Thus, one nozzle may be set to blast external surfaces and another the top and interior surfaces. Blasting is done by a mixture having the same formulation as that used in the first machine. This mixture is agitated continuously to keep solid particles from settling out and, after issuing from the nozzles, it then returns to a sump.

Blast is created by air fed through the nozzles from a supply line at 85 psi pressure, along with the water-grit mixture. Parts are loaded and unloaded by hand as the carriers pass the station where the operator sits.

Although some hand burring is still required on certain parts, use of the machines described saves much hand work.



TOOL LIFE TRIPLED

Sunicut with Petrofac* Improves Finishes and Lengthens Tool Life in Intricate Machining Job

In the machining of small parts for radios, a shop was using a dark cutting oil with poor results. Finishes were rough, tool life was unsatisfactory. The dark oil made the work hard to see.

Changing to Sunicut with Petrofac, the plant found the ideal oil for its purpose. Its cooling and lubricating qualities are producing excellent finishes, and increasing tool life from 10 hours to 30 hours. Further, machinists can see the work better through this transparent oil.

Job: Turning, forming, threading, pointing
Machine: Brown & Sharpe OOG Automatic
Part: Stud pulley for radio
Material: B 1112 steel
Tools: Rex AA high-speed circular form tools
Spindle Speed: 2,600 R.P.M.
Cutting Speed: 165 S.F.P.M.

These new grades of Sunicut with Petrofac are making possible better finishes than ever, and faster work in a wide range of operations. The new Sunicut grades with Petrofac possess superior metal-wetting, anti-weld, and extreme-pressure qualities. They are not blended with animal or vegetable fatty oils—cannot turn rancid. For additional information about the various Sunicut cutting oils, write for folder S-6.

SUN OIL COMPANY • *Philadelphia 3, Pa.*
In Canada: Sun Oil Company, Ltd.
Toronto and Montreal

*Petrofac is a trademark of Sun Oil Company.

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO

Fig. 1—Under-driven, detached type vertical edger installed on entry side of four-high reversing mill which serves as a rougher. This equipment assists in maintaining width uniformity and conditions slab edges in the production of both plates and hot rolled breakdowns for the coils

HOT ROLLED BREAKDOWNS

produced in converted Geneva plate mill

CONVERSION of the 132-inch semi-continuous plate mill of Geneva Steel Co., near Provo, Utah, now permits production of coiled, hot rolled breakdowns as well as continued production of high-quality steel plates in the normal range of sizes and gages manufactured by this United States Steel Corp. subsidiary. The coils form the starting material for the production of tin plate and sheet steel in the new cold reduction sheet and tin plate mill recently completed in Pittsburg, Calif., by Columbia Steel Co., another western subsidiary of U. S. Steel. The hot-rolled coils also will be supplied eventually to Columbia's new sheet mill planned for Los Angeles.

Geneva's hot-rolled steel production now comprises hot rolled coils, plates, and structural mill products. The general line of plates ranges from 120 inches wide in the heavier gages, down to and including 3/16-inch plates, 96 inches wide rolled through the continuous finishing stands. Structurals range from 15-inch I-beams and channels through Ts, angles, Z-sections, center-sill sections, and so on down to 3½ x 3-inch angles.

Plate mill equipment as it existed before conversion consisted of a two-high scale breaker, a four-high spreading stand, a four-high reversing rougher driven by a double-armature 7000-hp motor, a rotary crop shear, a two-high scale breaker, four four-high finishing stands (each driven by a 5000-hp motor through individual gear-reduction sets), run-out table, miscellaneous transfer tables, and plate-finishing equipment. With the installation of new equipment, including a slab squeezer, a vertical edger, two giant finishing stands and the coilers, the finishing speed of the combined plate and coil mill has been increased to a maximum of 2200 fpm, approximately doubling the former plate mill's speed.

The conversion project consisted primarily of two phases: First, the addition of necessary machinery (including side guides and loopers) in the hot mill line for production of hot rolled coils together with handling and storage facilities for these coils; second, rearrangement of facilities and addition of new equipment (including a new four-high roller leveler) in the plate finishing department to provide a more efficient means of handling and finishing plates produced from the same mill line. Part of the second phase will not be completed until late this summer. Installation of the new facilities in the hot mill line involved a shutdown period of only 2 weeks, permitting the plant to meet established production schedules. Output of hot-rolled coils and plates will continue at scheduled rates during completion of the remaining part of the conversion program.

Conversion Steps—The three continuous, pusher-type, slab heating furnaces, each of 78 net tons per hour capacity, were retained to supply heated slabs to the converted mill. At the furnaces, three heavy cast-steel bumpers, spring-cushioned and mounted on foundations independent of the furnace delivery tables, were installed to permit utilization of the heavier slabs required for production of hot-rolled coils.

A new addition to the mill itself was a slab squeezer that was installed just following the broadside or spreading stand of the original mill. This unit is designed to minimize slab width variations. Drive for the squeezer is of the crank type, operated by a 275 hp motor. An existing accumulator provides hydraulic pressure for the squeezer.

To assist in maintaining width uniformity and to condition the slab edges, a new under-driven, detached-type vertical edger was provided.

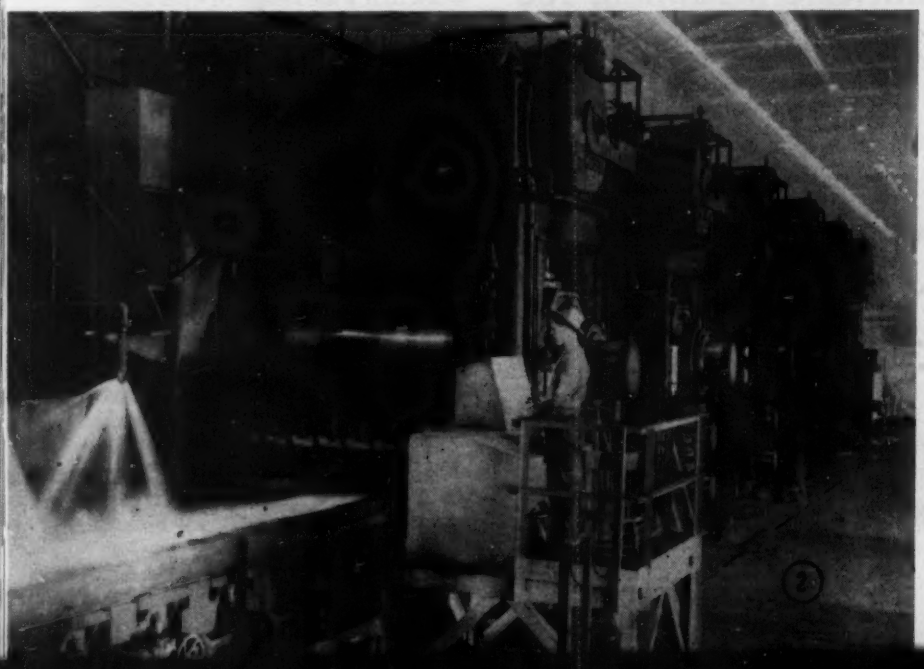


Fig. 2—Hot rolled breakdowns as well as steel plates are rolled on this finishing train of six-132-inch, four-high stands in the converted plate mill

"That 100-foot pipe run is shot again, chief... the darn thing corrodes through every six months!"
PLANT MANAGER
"Let's try 'KARBATE' pipe this time"

● *Are there spots like this* in *your* plant? Is corrosion causing repeated replacements of pipe line? If so, here's what "Karbate" Impervious Graphite Pipe can offer:

1. Resists the action of acids, alkalis and other chemicals
2. Light weight with adequate strength
3. Resistant to mechanical shock
4. Immune to thermal shock
5. Easy to machine and install
6. Full range of sizes and fittings immediately available

Write for bulletins M-8800 B and M-8801A. Learn about ease of **ordering** and **installing** "Karbate" Impervious Graphite Pipe and Fittings. Write Dept. S.

—

The term "Karbate" is a registered trade-mark of

NATIONAL CARBON COMPANY, INC

Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York 17, N.Y.

Division Sales Offices:
Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

Foreign Department: New York, U. S. A.

These products sold in Canada by Canadian National Carbon Co., Ltd., Toronto 4, Canada

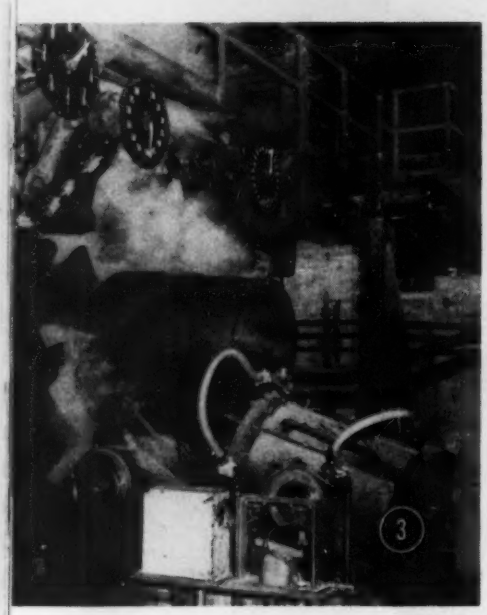


Fig. 3 — Coiler in operation. Coils vary in width from 24 to 72 inches and in lengths up to 2100 feet

This stand, which can handle the full range of widths for both plates and breakdowns for coils, is located on the entry side of the four-high reversing mill that serves as a rougher. Vertical rolls are of the overhung type and are 45 inches in diameter.

Two new 132-inch four-high stands were added to the existing four stands of the finishing train. Stands 5 and 6 (the two new stands) are both direct-driven by 5000-hp motors. The other stands have been so geared that speeds at No. 6 stand are double those formerly obtained at stand No. 4. Nominal maximum diameter of the working rolls of the four-high finishing stands is 30 inches. Characteristics of the several stands are given in the accompanying table.

Fig. 5—Another view of coiler in operation

Mill conversion for hot-rolled coil production was completed by installing two downcoilers, designed to handle material up to 77 inches wide. In the downcoilers, lengths of hot-rolled steel, traveling at high speed on the runout table following the finishing train, are deflected by a gate into the coiler throat and thence into a set of pinch rolls that feed the material into a radial cluster of forming rolls. The latter "curl" the steel to form a coil on the mandrel of the downcoiler. Completed coils are pushed off the mandrels onto a tilting arm at each coiler. This arm upends the coils while placing them on the coil conveyor that carries them to the new two-bay building provided for coil storage. Coils weighing 460 pounds per inch of width, with a maximum outside diameter of about 56 inches, can be handled by the downcoiler equipment.

Fig. 4—Coils on conveyor at down-tilter

The hot-coil conveyor system was designed to handle coils from 36 to 58 inches outside diameter, 18 to 77 inches wide, with a maximum weight of 20,000 pounds, at temperatures ranging between 1000 and 1400° F. Coils cool on their way to storage.

SPEED CONE OF THE 6-STAND FINISHING TRAIN (BASED ON 30-INCH ROLL DIAMETER)

Unit	Motor Horsepower	Motor Speed (rpm)	Gear Ratio	Roll Speed (rpm)	Delivery Speed (fpm)
Scale Breaker	500	150/600	22:184	17.9/71.7	120/480
Stand No. 1	5000	125/245	42:178	29.5/57.8	230/460
Stand No. 2	5000	125/245	38:112	42.4/83.1	340/650
Stand No. 3	5000	125/245	45:80	70.3/137.8	550/1090
Stand No. 4	5000	125/245	55:70	98.2/192.5	770/1510
Stand No. 5	5000	125/245	Direct	125/245	980/1020
Stand No. 6	5000	150/294	Direct	150/294	1180/2310

Converted Industrial TRUCK FLEET

. . . solves forge shop's handling problems

Following forging, a gas-electric truck moves an 8000-pound load of forged axles away from the hammer

FLEET of 16 converted gas-electric industrial trucks is currently saving Transue & Williams Steel Forging Corp., Alliance, O., approximately $16,000 every 10-year period. Handling raw steel from storage to shipping in the plant—which consists of many buildings spread out over a half mile square area—the fleet moves an estimated 10,500 tons of steel about 5040 miles per month.

Tasks performed by the fleet start with the movement of steel on skids from shears to the various production centers in the three hammer shops. Here it is heated and forged into a wide variety of parts. From the hammer shops, forgings are trucked to the cold trimming department where flash is removed. Flash continues on a belt conveyor to large scrap boxes, while another conveyor carries the trimmed forgings to skid boxes in which they are taken by truck to other departments for additional processing. Trucks again handle finished forgings both into the shipping department and during truck or rail loading operations.

The fleet of 16 trucks was purchased between 1929 and 1936. During 1940 and thereafter, increases in production requirements taxed them beyond capacity. One solution to this problem would have been to have acquired additional trucks. Three conditions militated against this somewhat obvious solution: 1. A shortage of manpower to drive the trucks already owned; 2. plant area would not permit the safe operation of any more vehicles; 3. trucks could not be procured.

In 1940 two used gas-electric units were secured. These were installed on two of the oldest trucks; they performed so well during the entire war period that it was decided to equip the entire fleet when such units became available. Conversion of all trucks to gas-electric was completed recently.

Results—Since the majority of the fleet has been operating with gas-electric units for over 2 years, it is possible to state some definite advantages, based on direct observation of their operations.

On the credit side, the ton-mile capacity of the trucks due to the constant speed in hauling, and increased total operating time increased the trucks capacity by 20 per cent. The gas-electric units require only 5 to 10 minutes per shift for gas, water and oil. Though maintenance costs appear to be about the same and operating costs are slightly higher, overall cost of operating the trucks is expected to be considerably less than for the previously-used trucks. Present indications are that gas-electric units will require one complete overhaul every 10 years. In a 10-year period, costs of capital investment and upkeep of power units per truck are $1300 for gas-electric. In addition, it is expected that the gas-electric unit will be good for almost another 10 years' service before another complete overhaul.

On the debit side are the operating characteristics of the gas-electric units themselves. They are unquestionably noisy and do emit into the atmosphere some noxious exhaust fumes. The latter, however, have not seriously inconvenienced our operations since all buildings have high head-room and are for the most part somewhat open. In the winter, antifreeze must be added for those trucks which operate in the open.

University To Hold Product Design Seminar

Primary purpose of a six-week product design seminar to be held at Lehigh University will be to prepare industrialists, generally at the managerial level, to initiate and administer product design projects through a full understanding of what is to be accomplished and a sound basis for evaluating the work as it progresses. Beginning July 5, the seminar will be limited in registration to 50 delegates representing manufacturing companies. Twenty-nine leading industrial designers and product developments men will form the faculty.

The seminar will use five basic presentation techniques: Lectures with accompanying transcripts; laboratory exercises where personal contact with and evaluation of technique are necessary; informal discussions in small groups; case studies of marketed projects; and visual aids such as motion pictures, slides, graphs, models and samples.

—o—

Manufacturing Chemists' Association, Washington, D. C., is publishing two chemical safety data sheets SD-29 on ethyl ether and SD-30 on sodium cyanide. Designed for supervisory staffs and managements, the manuals present essential information for safe handling and use of these chemical products.

FIVE CRANE TRAVEL MOTIONS

. . . speed handling of coiled rod and wire in steel plant's storage area

ADDITION of a rotating action to a new type overhead crane recently installed in the Los Angeles wire mill of Bethlehem Pacific Coast Steel Corp. has facilitated the handling of coiled rod and wire. The coiled wire, arriving in railroad cars from the rod mill at the same plant is picked up and turned 90 degrees for placement in large storage bins along one side of the coil storage building.

Suspended from the crane, installed by Cleveland Tramrail Division of Cleveland Crane & Engineering Co., Wickliffe, O., is a hairpin type hook which is tilted either up or down when threading into or drawing away from the coils. Hoisting, tilting, trolley travel, bridge travel and rotation motions are engineered into the underslung four-runway crane which travels the length of the storage building, some 230 feet. The crane trolley travels on a 77-foot bridge from side to side of the building and the rotating carrier operates on a circular track built into the trolley. Car-

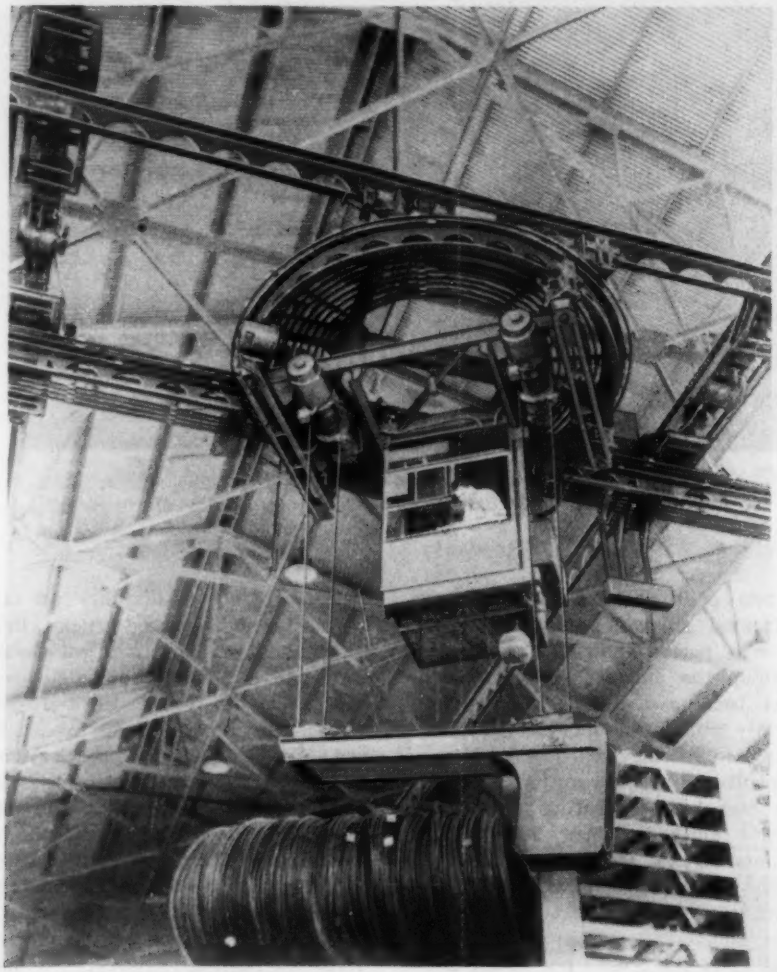
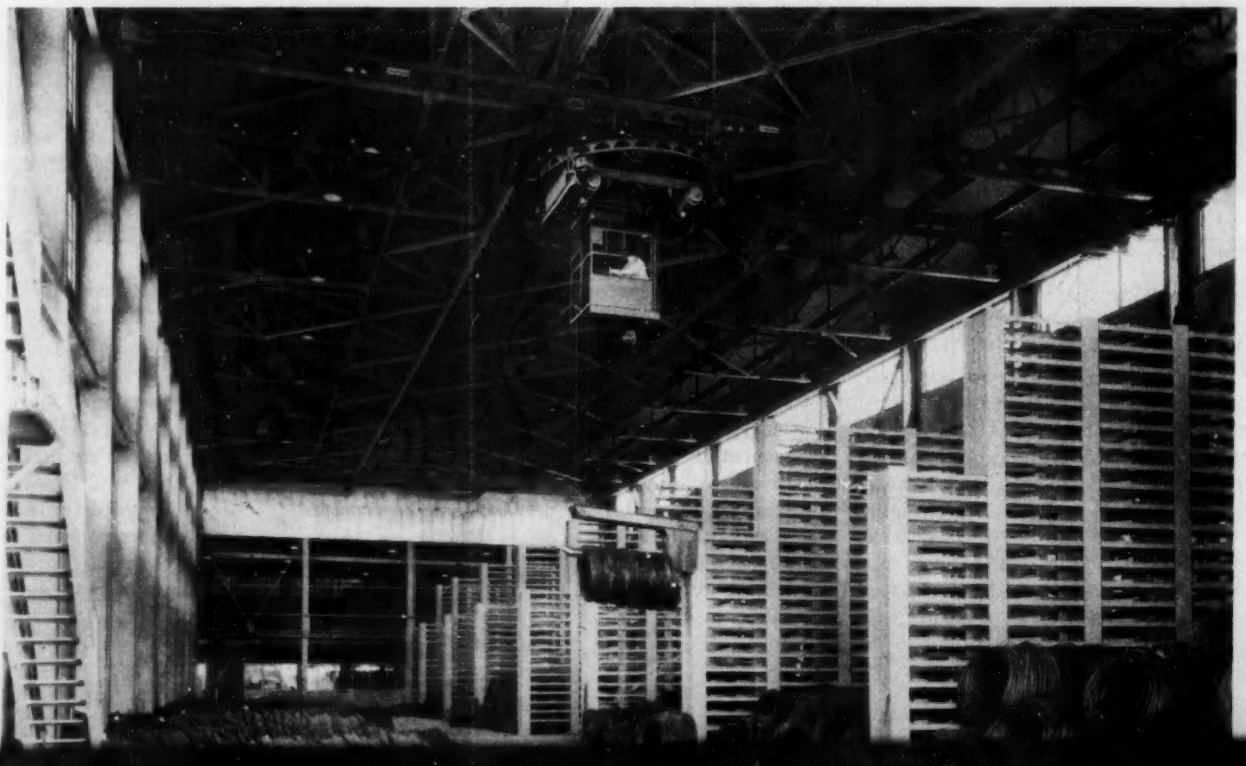


Fig. 1 *(left)—Crane motions are controlled from cab mounted on rotating carrier operating on circular track built into the trolley. Crane speeds are: Bridge,* 400 *fpm; trolley,* 200 *fpm; hoist,* 50 *to* 80 *fpm; and rotation,* 75 *fpm*

Fig. 2 *(below)—Bethlehem Pacific coiled rod and wire warehouse placed in operation late last year. Five-way-travel crane is shown raising coiled rod from temporary floor storage prior to turning* 180 *degrees for placement in storage bins at right*



Tasteful use of Nickeloid Metal adds beauty to a functional application by Cory.

CORY LINE EMPLOYS PRE-PLATED METALS

A *pre-plated* Metal, Chrome plated Brass, is being used by the Cory Corporation as material for the handle holder on its line of coffee makers. The application is interesting because it typifies how Nickeloid Metal can be used to add an important decorative touch to a functional application. The application is also interesting because of production savings.

FABRICATION SHORT-CUT Pre-finished metals eliminate three costly production steps — plating, cleaning and polishing. With Nickeloid pre-plated Metals, the manufacturer simply fabricates, then assembles. Without damage to the lustrous finishes, Nickeloid Metals can be stamped, formed, drawn, bent, soldered or spot welded. Where fabrication is unusually severe, the metal can be provided with a protective coating — a pressure sensitive paper or a stripping type plastic film — which protects the metal during fabrication, then peels off easily and quickly.

BROAD SELECTION Nickeloid Metals are platings of Chromium, Nickel, Brass or Copper to such base metals as Steel, Zinc, Brass, Copper or Aluminum. Some 17 different metals are available, each qualified to meet certain specific design requirements — for beauty, durability, rigidity, pliability, cost, corrosion- or rust-resistance.

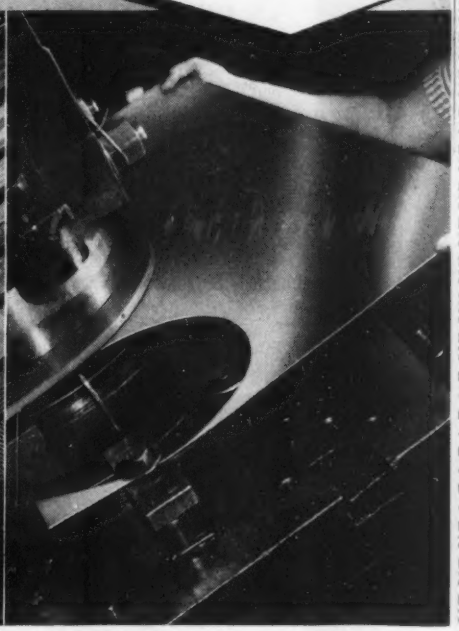
APPLICATIONS INCREASE As the pressure for lower prices increases more and more consumer goods manufacturers are studying the advantages offered by Nickeloid pre-plated Metals. These advantages are usually several fold, including lower fabricating costs, faster production, smaller in-process inventories, increased product beauty and salability. Nickeloid pre-plated Metal is a product of the American Nickeloid Company, Peru 1, Illinois.

Nickeloid Metals mean...

a finer MORE SALABLE **MATERIAL**

a faster MORE ECONOMICAL **METHOD**

LUSTROUS FINISHES, patterns, add new beauty, new sales appeal to a product.



NICKELOID METALS require no plating, polishing before or after fabrication.

You can *forget* plating and finishing problems when you switch to Nickeloid Metal. The finish is *already on* — a lustrous, durable finish in a rich variety of patterns to add new beauty, new sales appeal to your product. Yes, Nickeloid pre-finished Metal gives you *both* a finer material and a lower-cost production method. Nickeloid Metals are available in sheets or coils in a wide range of gauges and tempers, plated one or two sides, bright or satin finishes of Chromium, Nickel, Brass or Copper plated to base metals such as Steel, Zinc, Brass, Copper and Aluminum. Write today for samples and prices.

Write for new "Sampler" containing representative samples of Nickeloid *pre-plated* Metals.

NICKELOID METALS (Pre-Plated)

NICKEL · CHROMIUM · BRASS · COPPER *Electro-plated* TO ALL COMMON *Base* METALS

ALSO LACQUERED COLORS SHEETS AND COILS

OLDEST AND LARGEST PRODUCERS OF PRE-PLATED METALS

AMERICAN NICKELOID COMPANY

PERU 1 ILLINOIS

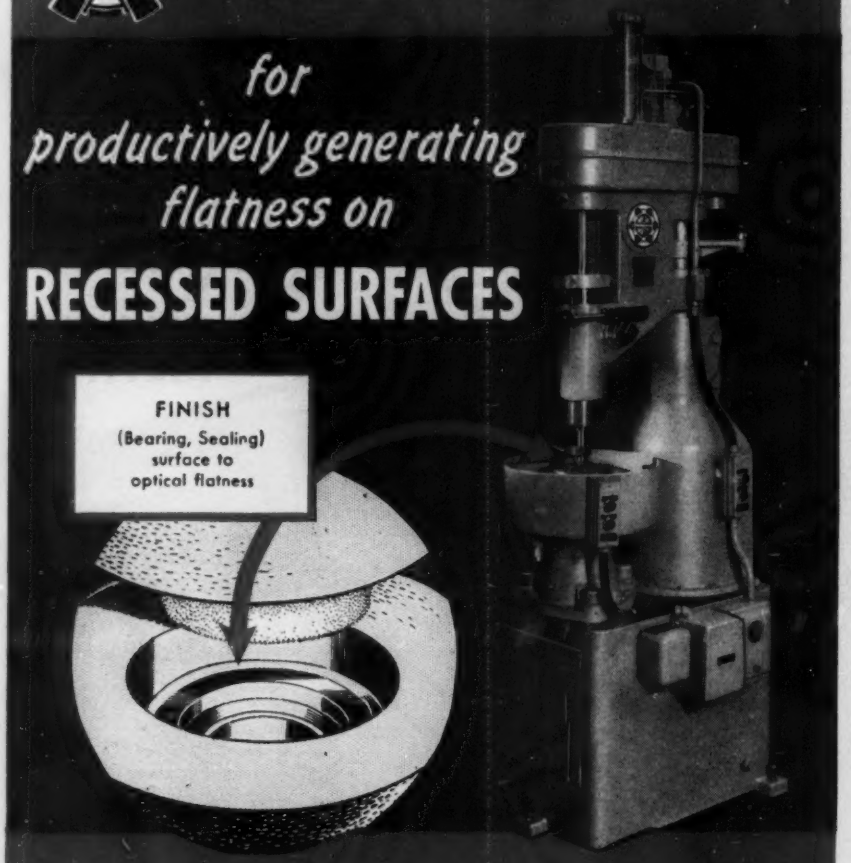
Established 1898

MICRO MATIC

MICROFLAT

for productively generating flatness on

RECESSED SURFACES



● Microflat machines may be equipped to finish recessed surfaces.

The location of a surface does not limit the application of the MICROFLAT machines. Any surface that can be machined can be finished with this equipment. The surface finish and flatness generated can be controlled and held to any specified requirement.

The machine shown above is equipped with a timer and an air cylinder. The operator loads the part into the fixture and starts the cycle. The fixture rotates, the bonded abrasive finishing surface oscillates and rotates. At the end of a predetermined time cycle the spindle automatically withdraws. Production is 300 pieces per hour.

MICROMATIC HONE CORPORATION

8100 SCHOOLCRAFT AVENUE, DETROIT 4, MICHIGAN

DISTRICT FIELD OFFICES:

1323 S. Santa Fe, Los Angeles 21 — 616 Empire Bldg., 206 S. Main St. — 55 George St., Brantford, Ont. — Micromold Manufacturing Div., Boston Post Road

rier has two separate hoists, cables from which are reeved to the two ends of the hairpin hook. Hoist has a lift of 40 feet.

Wire can be handled by the new crane at the rate of 3500 pounds per lift. An operator in the cab attached to the carrier controls all motions of the equipment. The hook may be raised, lowered, or tilted upward or downward by separate or simultaneous operation of the hoists. Dynamic braking features the variable five-speed magnetic bridge and trolley control. Incorporated in the variable speed drum type hoist control is dynamic lowering. Rotating control is automatic accelerating.

Resistance Welding Contest Announced

Announcement of cash prizes to be awarded in 1949 for outstanding papers dealing with resistance welding subjects is made by the Resistance Welder Manufacturers' Association of Philadelphia. The total amount of awards is $2250 and a wide choice in subject matter is allowed in order to assure eligibility to all papers which cover worth while and significant achievements in the field, the association states. The contest is open to anyone, without restriction, from the United States, its possessions and Canada as well as any member of the American Welding Society in any grade from any place in the world.

Cash Awards Offered

Awards of $750, $500 and $250 are being made for the best three papers emanating from an industrial source, consulting engineer, private or government laboratory, etc., the subject matter of which is concerned specifically with resistance welding. Prizes of $300 and $200 are for the best paper from a university source, the author of which is either an instructor, graduate student or research fellow. Final award of $250 will go to an under-graduate student. Awards in the last two classifications will be on the basis of the greatest original contribution made by the contestant to the advancement of resistance welding.

Contest is considered as having opened August 1, 1948. In order to be eligible all papers must be delivered at American Welding Society headquarters no later than July 31, 1949. Other information and requirements may be secured from the Resistance Welder Manufacturers' Association, 505 Arch St., Philadelphia 6, Pa.

VAPOR DEGREASING

SAVES TIME

CUTS COSTS

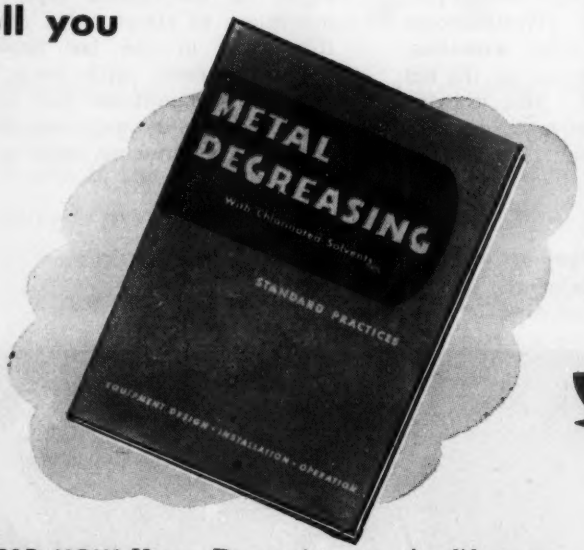
BOOSTS PRODUCTION

Because in *one* operation, in *one* minute or less, grease and oil can be removed thoroughly from large and small metal parts of any size or shape. Production is not disturbed because parts are left clean, warm and dry, ready for further fabrication or finishing.

NEW, IMPROVED "TRICLENE" D TRICHLORETHYLENE HELPS YOU GET TROUBLE-FREE OPERATION

This new solvent is by far the best commercial solvent yet developed by Du Pont for metal degreasing. It stands up against contaminating and destructive materials which may be introduced in degreasing . . . assists materially in carrying out speedy, economical, efficient cleaning.

Let this book tell you



READ HOW Vapor Degreasing can simplify production . . . save you time and unnecessary costs. Read why the results obtained can't be matched by any other method. It shows typical compact equipment available for efficient and economical operation. And it gives information about solvents used in this equipment—Du Pont "Triclene" D Trichlorethylene, and Du Pont Trichlorethylene and Perchlorethylene—which under various trade marks have been widely used for many years. Send for it today!

DU PONT non-flammable SOLVENTS for VAPOR DEGREASING

SOLD NATIONALLY THROUGH DISTRIBUTORS

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

CLIP THIS COUPON—MAIL TODAY!

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Delaware

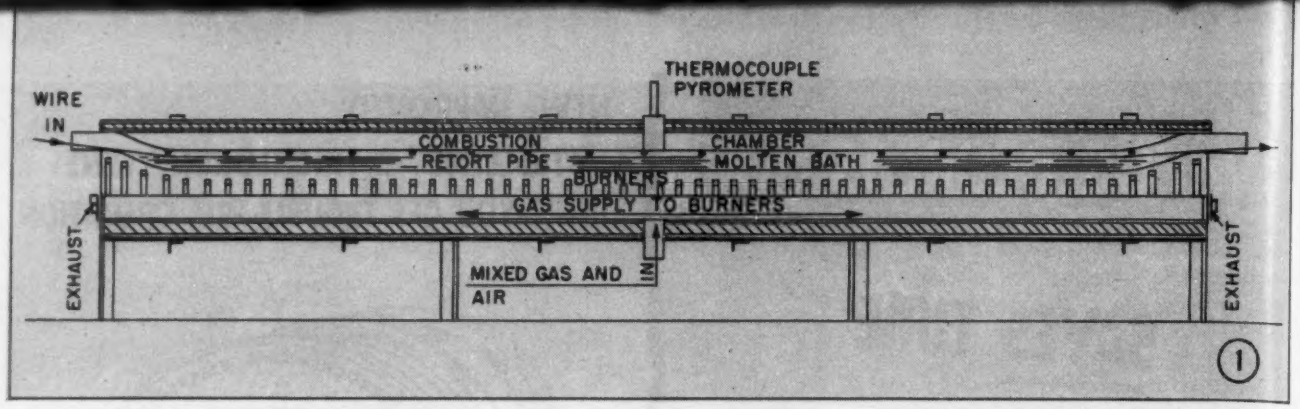
Please send me my copy of "Metal Degreasing—Standard Practices."

Name_____

Position_____

Firm_____

Address_____



Process for

Hot Drawing Wire

. . . gives excellent physical properties and eliminates repeated annealing and pickling operations

By RHEINHOLD SCHEMPP

Assistant Manager
Sanderson-Halcomb Works
Crucible Steel Co. of America
Syracuse, N. Y.

FOR a number of years Crucible Steel Co. of America has been successfully hot drawing high speed steels and other difficult-to-cold-draw specialty steels in the wire department of its Sanderson - Halcomb Works, Syracuse, N. Y. The present commercial techniques and practices are the result of thorough metallurgical studies object of which was to eliminate hazards and quality impairments such as surface decarburization and sluggish response to subsequent heat treatment which are the usual undesirable by-products of the necessary repetition of annealing and cleaning operations in the cold working and drawing of these steels to the required small diameters.

In general, the commercial size range for hot drawn products is under 0.250 to 0.015-inch. The finished wire may be supplied either as hot drawn or with a subsequent surface removal by centerless grinding in accordance with customers' specifications.

Initial hot rolling of the coil stock on a rod rolling mill is followed by a full annealing operation in specially constructed furnaces and under a protective atmosphere (Westinghouse Mono-Gas). After this annealing, the coils are transported to the hot drawing department. Hot drawing equipment consists of a pay-off reel, a gas-fired lead bath in the form of a tube with gooseneck ends, both on the entrance and exit, an automatic lubrication of the hot wire by means of a graphite spray between the exit of the lead bath and the drawing die, and the usual wire drawing block with die holders and rotating variable speed drum. The drawing dies used are made of tungsten or tantalum carbide and are preheated.

Temperature of the lead bath is automatically controlled by standard pyrometric equipment. The actual temperature of the lead bath may be changed for the various types and compositions of steels to be drawn.

Reductions in the hot drawing which are possible with steels and even with compositions and alloys which normally do not lend themselves to a cold drawing, equal or ex-

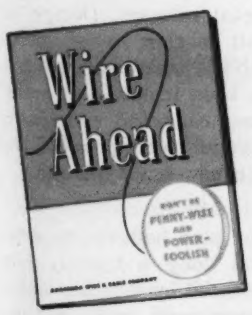
Fig. 1—Cross-section of gas-fired lead bath

Fig. 2—Hot drawing equipment consists of pay-off reel, gas-fired lead bath in form of a tube with gooseneck ends, means of automatic lubrication, wire drawing block with die holders and rotating variable speed drum

But what about the DISAPPEARING ACT *in your plant?*

You might be even more mystified to discover just how much of the electric power you pay for isn't there when it gets to the machines. It's the black magic of overloaded, over-extended, obsolete wiring* that slows down motors and men.

Your plant power engineer, consulting engineer, electrical contractor or utility power salesman knows how to materialize your vanished power. Better ask . . . *soon.*



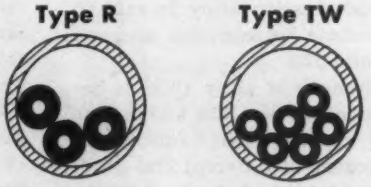
***WIRE AHEAD** . . . a comprehensive discussion of preventive maintenance, points out the symptoms of inadequate wiring, presents detailed plans for anticipating electrical demand. Forty-eight factual pages of practical information and suggestions free on request.

Densheath Type TW Building Wire with its special thermoplastic insulation is sound production insurance in any plant. It will not support combustion, is long-aging, impervious to acids, oils and alkalis. It is recognized by the National Electrical Code for circuits up to 600 volts and temperatures up to 140° F. . . . and for wet and oily locations. Being light weight, with a smooth, slick finish and without braid, Densheath pulls through easier . . . resists abrasion. Permanent, bright colors for quick circuit identification. Write for literature.

This is important, too—*for rewiring in existing raceways,* the Code recognizes the smaller diameter of Densheath TW and permits more conductors to be pulled in the same size conduit. Below, a typical case—

49437

½" CONDUIT



ANACONDA
from mine to consumer

ANACONDA WIRE & CABLE COMPANY

25 Broadway, New York 4, N. Y.

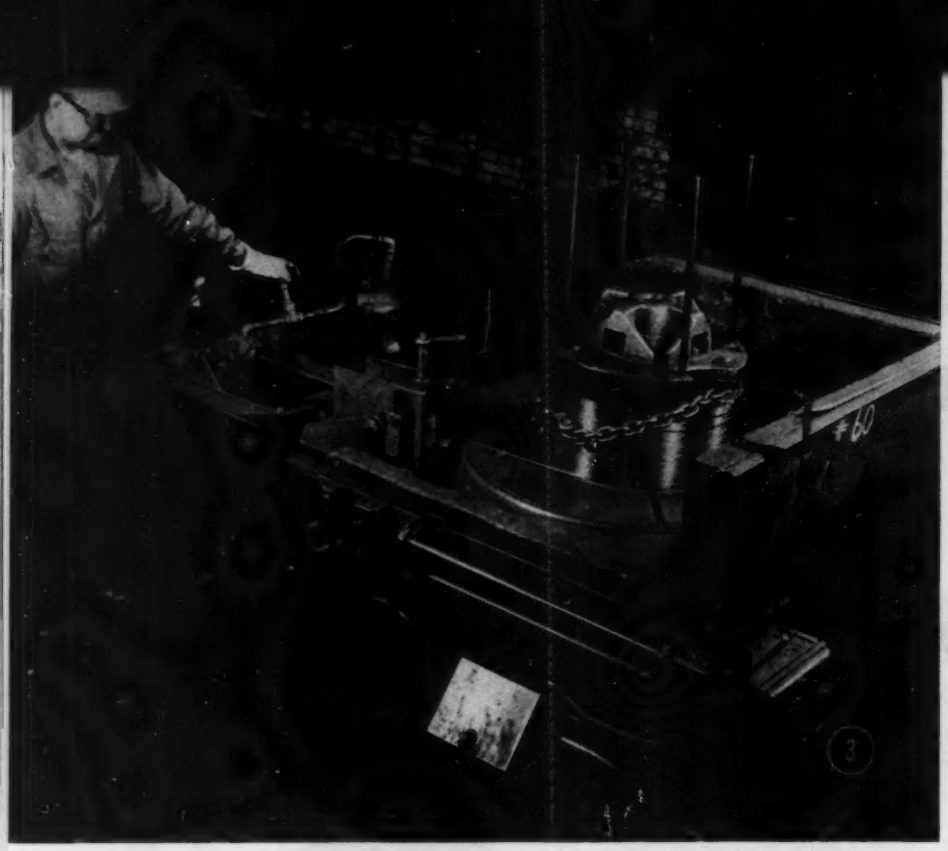


Fig. 3—Wire drawing block and rotating variable speed drum

ceed those regularly used in the cold drawing of softer steels. For instance, on high carbon high chromium die steels and on high speed steels, single pass reductions of 25 per cent or more are not uncommon.

Drawing speeds may range from 150 to 300 fpm, depending on the diameter of the wire being drawn, as well as on the composition of the material. In order to control size of the wire accurately, it is important to pay particular attention to the temperature of the lead bath as well as the temperature of the drawing die. While the wire is actually heated in the lead bath to temperatures in excess of 950° F, the temperature of the wire as it enters the drawing die is cooled to within a temperature range of approximately 600 to 650° F, and likewise, the die itself is heated to a similar temperature so as to prevent freezing of the stock in the die.

The initial hot drawing reduction is then immediately followed by subsequent hot drawing passes, with the number of repeated drawings being often as high as eight or ten, depending on the required finish size.

This repeated drawing without intermediate annealing or strain relieving operations is only possible with the hot drawing process, since the hot reduction does not materially increase the hardness of the wire. In contrast to this, the cold drawing operation does cold work the material to an extent which substantially increases the hardness of the stock, thereby necessitating an intermediate annealing and pickling before the wire can again be given an additional cold drawing.

Economic advantages of the hot drawing method may be summarized briefly as follows:

1. The hot drawing method offers the possibility to commercially "reduce by drawing" materials and compositions which have heretofore been considered impossible to cold draw.
2. In hot drawing high speed steels and similar compositions, a product of improved quality is obtained due to the elimination of the usual repeated annealing operations, with the finished product showing a superior structural condition and better toughness properties when properly heat treated.
3. Hot drawing eliminates the hazards and expenses of repeated annealing and pickling operations.
4. In view of the speed with which this method permits the hot rolled coil product to be reduced to the specific finish dimensions, prompt deliveries can be maintained with considerable savings, not only in actual operations but also by reducing the need for large and expensive stock inventories.

Diversified Uses Seen For New Aluminum Alloy

Expected to become widely used in the refrigeration, appliance, utensil, building materials and miscellaneous manufacturing industries is a new aluminum alloy, designated as 15OS, introduced by Permanente Metals Corp., Oakland, Calif. The general-purpose specification alloy is said to be intermediate between the common alloys 3S and 52S.

Yield strength of alloy 15OS is between that of 3S and 52S alloys. The company reports that fabrication tests on dozens of different end products have established its workability as approximately equal to that of alloy 3S and its finishing characteristics superior to 3S. It is further reported that the corrosion resistance of 15OS is superior to that of 3S and welding and brazing characteristics of the alloy are intermediate between 3S and 52S.

Serves as Bulldozer

In order to spread many tons of cinders over a new parking lot, a mid-West manufacturer attached a bulldozer blade to the front of a Lorain crawler crane, made by Thew Shovel Co., Lorain, Ohio. Problem of raising and lowering the bulldozer blade was solved by attaching it with a chain to the crane boom. Thus by raising or lowering the boom, height of the blade was easily controlled. The arrangement is said to have worked so well that the same set-up was used as a snow plow to clean aisle ways for material handling equipment in the outside storage areas.

Better Visibility

Unobstructed vision is given the operator of the new low-cab locomotive, built by Plymouth Locomotive Works, Plymouth, O., and recently placed in service by a large Eastern nonferrous metal refinery. Design of the power unit in this 10-ton diesel locomotive has not been changed, but features have been included to bring about operating ease and efficiency. The 24-inch gage locomotive is the first made with new low type cab.

—o—

Fastening of pipe hangars to concrete or metal, long a tedious job, has been facilitated by a power operated driver that will "pin" a pipe hanger to a concrete ceiling or wall, steel I-beam or column, in a few seconds, it is reported by Mine Safety Appliances Co., Pittsburgh.

Now - Magnetorque Crane Control takes over

So superior is the new Magnetorque Control in every phase of operation that it has now been adopted as standard for all P&H AC Cranes.

This means that the old mechanical load brake has become obsolete. Instead, this new control transmits braking forces electromagnetically. There is no friction—no wear —no maintenance of brake linings. It is more positive. It provides better speed-load characteristics. And it lasts the life of the crane. Before you invest in new crane equipment, be sure to get the facts about it.

P&H

OVERHEAD CRANES
4411 West National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

HOISTS · WELDING ELECTRODES · MOTORS · EXCAVATORS · ELECTRIC CRANES · ARC WELDERS

P&H

MAGNETORQUE CRANE CONTROL
IS ANOTHER P&H ADDED VALUE

OVER 15,000 P&H CRANES SERVE AMERICAN INDUSTRY...FAR MORE THAN ANY OTHER

Sheet Metal Operations

(*Continued from Page* 83)

pressure. Production rate 59.4 minutes per 100 pieces. 6. Assembly.

Oil pan, shown in Fig. 2, at the right, is formed from 0.090-inch hot rolled stamping quality sheet steel. Size of blank is 23½ x 41 inches, which makes two pieces. Sequence of operations is as follows: 1. Shear in strips on shear. 2. Blank, first draw 2 inches deep and emboss in 300-ton press, employing 300 tons ram pressure and 100 tons die cushion pressure. Production rate 46.8 minutes per 100 pieces. 3. Second draw, restrike, trim outside, pierce all holes and wipe flange in 500-ton press with ram pressure of 500 tons and die cushion pressure of 30 tons. Production rate 2 hours and 6.6 minutes per 100 pieces. 4. Wash.

For oil pan operation No. 3 just alluded to, four separate dies are mounted on one master set, thus at each stroke of the press four pans undergo various operations simultaneously. The mounting of four dies on one die set is not too common a practice—it is done in this instance to give economy in setup time and to effect savings in die storage space and savings in direct labor.

Flywheel Dust Shields—Another interesting forming procedure is that for flywheel dust shields, a pair of which are illustrated in Fig. 2, at top right. These shields are made from 0.060-inch hot-rolled stamping-quality sheet steel; a blank 12 x 16 inches makes two pieces.

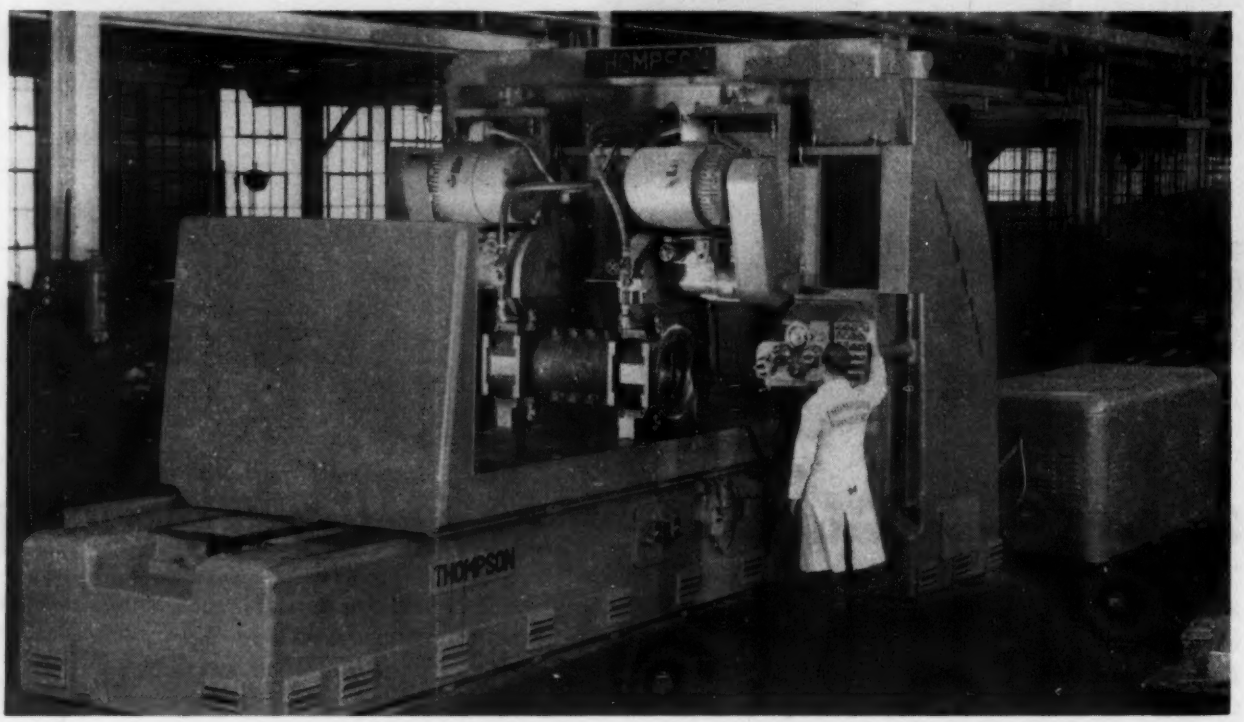
Sequence of operations using a 3 stage progressive die is as follows: 1. Shear in strips on 10-foot shear. 2. Shear in pieces on the shear. 3. Draw to depth of ¾-inch, trim outside diameter and part in two pieces and pierce holes on 500-ton press. Production rate is 28.8 minutes per 100 pieces.

The three progressive dies perform the three operations just mentioned upon each stroke of the press. The center die accomplishes the drawing and is the only one of the three to use the die cushion pressure of 38 to 40 tons. Right-hand die trims the outside diameter and parts the two pieces. Left-hand die pierces the holes. Press run on the flywheel dust shield is 1200 pieces.

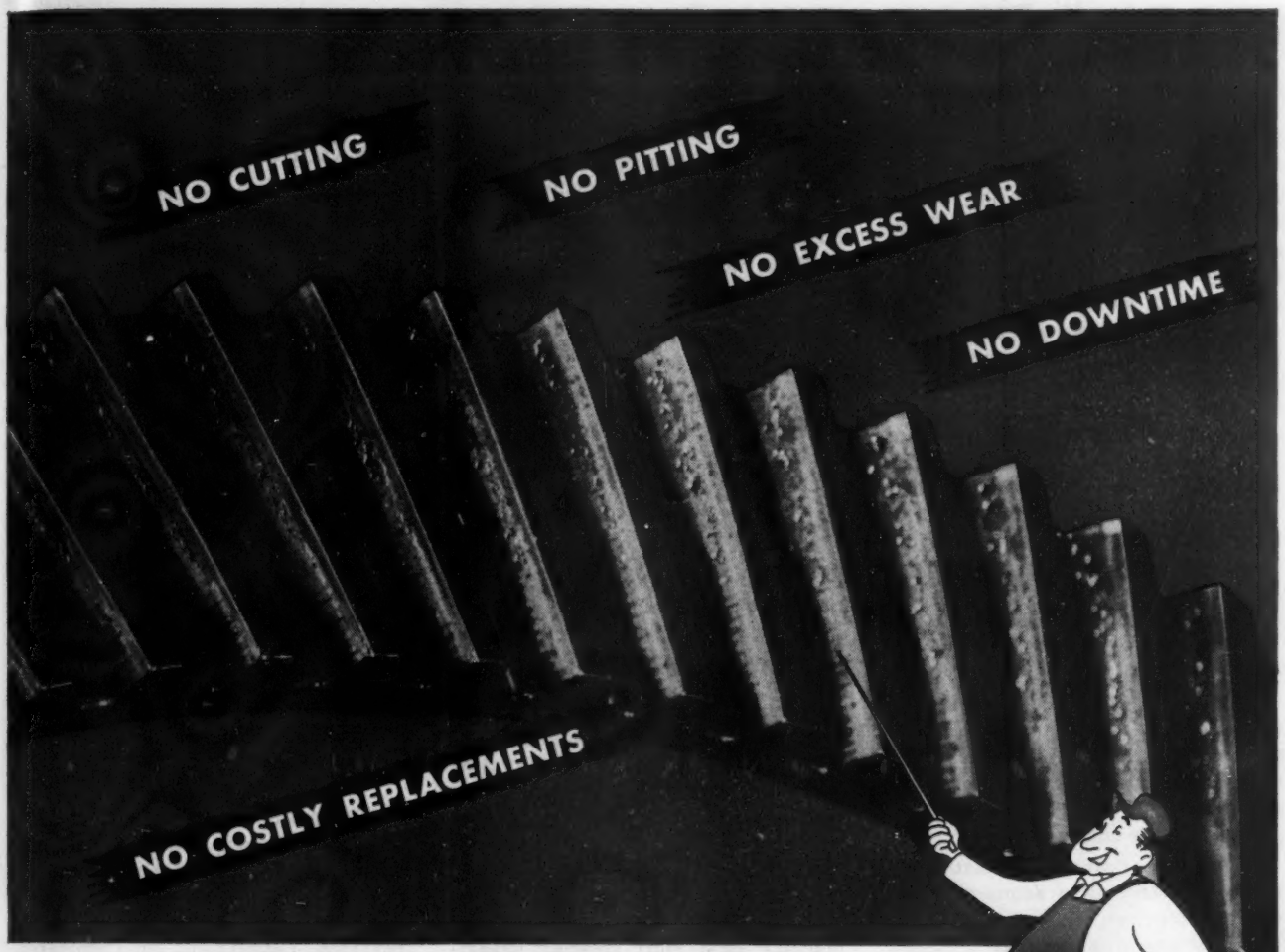
Another unusual job in the Deere shop is the forming of the tractor draw bar which is of special design and consists of three parts, namely, the draw bar beam, draw bar beam plate and draw bar clevis plate. Following forming, the beam and beam plate are assembled and welded together. In Fig. 2, at the extreme left, is shown a draw bar beam; a beam plate is at the right, and the assembly resulting from welding the two together is adjacent to the right.

The draw bar beam is made from 0.134-inch hot rolled stamping quality steel sheet. A blank 18¼ x 48 inches makes two pieces. Sequence of operations is as follows: 1. Shear in pieces on the 10-foot shear. 2. Rough blank outside edge in 500-ton press, employing 250 tons ram pressure without die cushion. Production rate 45 minutes per 100 pieces. 3. Form on 500-ton press using 300 tons ram pressure and 25 tons die cushion pressure. Production rate 40.2 minutes per 100 pieces. 4. Draw channel 2 inches deep on 500-ton press under ram pressure of 400 tons and die cushion pressure of 45 tons. Production rate 48 minutes per 100 pieces.

Restriking—Operation No. 5 is to restrike on 500-ton press under 400 tons ram pressure without use of die cushion. Production rate 52.2 minutes per 100 pieces. 6. Trim and pierce all holes on 500-ton press with pressure of 250 tons on ram and without die cushion. Production rate 62.4 minutes per 100 pieces. 7. Ferrule all



VERTICAL AND HORIZONTAL GRINDS: Two heads of this Hydrail surface grinder made by Thompson Grinder Co., Springfield, O., operate independently or together for the grinding of ware strips in the horn guides of bearing and wheel casings. One of a line designed to handle work from rough to finish up to 48 inches vertically and horizontally with maximum table length up to 240 inches, this grinder was ordered by an English concern. All cycles of operation are completely automatic



Do you have gears that look like this? Brooks "LEADOLENE" will gradually improve these gears so that they will "smooth-up" and definitely reduce the amount of wear.

BROOKS "I.P." LEADOLENE

FOR YOUR LUBRICATION PROBLEMS

on CIRCULATING OIL SYSTEMS and OPEN GEARS

Lubrication Dan (the Brooks Oil man) shows the points of excess wear on gears—the spots that cause production worries from pitting, cutting and excess wear. As these conditions increase—so increases the danger of costly breakdown.

In the Brooks files are many cases where the gears have been in much worse condition than shown above, yet when Brooks "LEADOLENE" was introduced into the system further wear was immediately stopped. While "LEADOLENE" cannot build up the lost metal, it forms an indestructible pH-ilm that cannot sludge or breakdown. "LEADOLENE" provides a pH-ilm safety factor of up to 35,000 pounds pressure per square inch against the normal load of ordinary mineral oils of 6000 pounds per square inch.

Water will not contaminate or affect "LEADOLENE", eliminating the need for centrifuging. In addition, "make-up" has proved negligible as compared with ordinary mineral oils. Brooks engineers will be glad to work with you on *any* lubrication problem. Write today.

*LEADOLENE—the "I.P. Lubricant" (Indestructible pH-ilm).

The Brooks Oil Co.

Pittsburgh 12, Pennsylvania
Cleveland, Ohio
Hamilton, Ontario

Warehouses in Principal Industrial Cities

openings on No. 7½ Verson crank press. Production rate 34.3 minutes per 100 pieces. 8. Pierce and coin two holes in special cam die in Verson 7½-ton crank press. Production rate 36 minutes per 100 pieces. 9. Wash.

The draw bar beam plate is formed from 0.134-inch hot rolled stamping quality sheet steel, blank size being 14⅝ x 41⅝ inches, this making two pieces. Sequence of operations is as follows: 1. Shear in pieces on the shear. 2. Blank and pierce all holes in 500-ton press, employing 250 tons ram pressure without use of die cushion. Production rate 46.8 minutes per 100 pieces. 3. Form on either 500 or 300-ton press, using ram pressure of 300 tons without die cushion. Production rate 37.8 minutes per 100 pieces. 4. Ferrule holes on No. 7½ Verson crank press. Production rate 31.8 minutes per 100 pieces. 5. Wash.

Draw bar clevis plate is produced from SAE 1018 flat hot rolled steel of ⅝ x 2¾ x 17¾-inch stock size. A 300-ton press is used as a punch to pierce three ⅛-inch holes and one elongated hole, in one operation. Ram pressure applied is 100 tons with 250 tons pressure on die contact.

Draw bar beam and plate are welded together in a submerged arc welding machine shown in Fig. 3. This machine was specially designed to Deere specifications by Cecil C. Peck Co., Cleveland, and employs a shielded arc head supplied by Lincoln Electric Co., Cleveland. The beam is placed open-side up in a special fixture and the plate is set inside, the fixture then being tightened to clamp the two parts together. In the illustration, the man at the left is clamping the two parts in a fixture.

Automatic Welding — When the fixture is moved under the welding head and the weld started, the machine is automatic in operation. The weld is of irregular contour, thus the electrode is guided over the path by a templet shown at the right on the machine table. Furthermore, the weld does not fall in a single horizontal plane, therefore elevation and depression of the arc is controlled by a cam plate and follower shown on the table just to the right of the operator.

Welding cycle is 55 seconds per draw bar and production rate is 5 hours 39 minutes per 100 pieces. Two men are required to operate the machine, one to supervise the welding and the other to load and unload the fixture and to chip and clean the welds with an air hammer. For dumping loose flux after welding, the machine table has a tipping section operated by air cylinder. An elevator returns the flux to the overhead feed hopper.

In addition to the sheet metal shop, the John Deere Dubuque Tractor Works operates a gray iron foundry, machine shop, heat treating department, assembly shops, metallurgical department and power plant. It also has its own product development department and shop and field testing area. Factory buildings cover 60 acres of which 910,000 square feet is floor space, and 1900 persons are employed.

Process Removes Burrs On Gage Block Edges

Burrs consisting of metal forced out to the edges of gage blocks by the abrading particles used in the lapping process are eliminated by a development of DoAll Co., Des Plaines, Ill. By a special process, all amorphous metal and wire edge on these gage blocks is removed. This is accomplished by introducing a second parabolic curve blending the original radius on the block edges with the finished surface of the gage.

Process is said to have no effect upon the flatness or accuracy of the gage and the gage surface reportedly is not reduced in area. Measurements of hardness at the edge of the burr-proofed block is 65 Rockwell C, the same as on the gaging surface. The company states the development is expected to extend gage block life by 100 per cent.

—o—

A new subject index and abstract collection of more than 1000 unclassified scientific and technical reports dealing with European technology is available from the Office of Technical Services, Department of Commerce, Washington 25, D. C., for $3.00. It is the first of a series of such volumes, all of which will deal with technical findings of allied investigators in Germany and occupied Europe since the war.

"Automatic Washer"

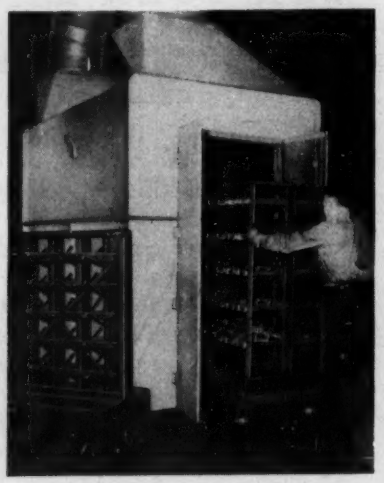
Speeds Cleaning of Gear Racks

NECESSITY that hundreds of caster-mounted racks used for handling of gears be thoroughly cleaned prior to carrying the finished gears to assembly presented a problem in the plant of Warner Gear Division of Borg-Warner Corp. Inasmuch as the racks were cleaned by hand methods outside the plant, certain days were designated for cleaning the racks and many man-hours were required to keep enough cleaned racks ahead.

Seeking of a faster and more efficient way to clean the racks led the plant's process engineers to install an automatic rack washer, built by Alvey-Ferguson Co., Cincinnati. The completely enclosed washer is located inside the plant near a trucking aisle and is a pit-type installation for easy access at floor level.

Each trucker is made responsible for placing a soiled rack in the washer when a clean one is removed. Trucker simply closes the washer, presses a button to place it in operation and proceeds with the previously removed clean rack. The washer cleans the rack and shuts itself off automatically.

Set on an automatically timed, 3-minute wash cycle, the unit is said to clean approximately 100 racks each day. The high pressure oscillating wash mechanism strips away grease and dirt, including oil, metal chips and grinding dust.

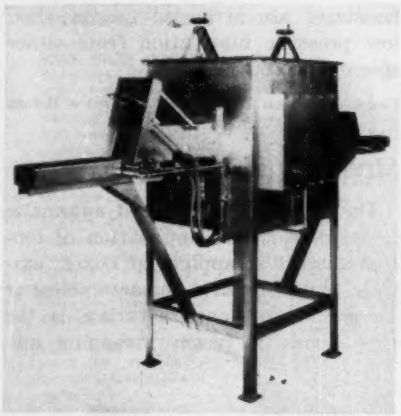


New Products and Equipment

Electric Furnace

Pereny Equipment Co., 893 Chambers Rd., Columbus 13, O., is manufacturing an electric furnace for use in sintering powdered metals, brazing, bright annealing and other operations. The model SNX furnace has normal heat range of 1400 to 2500° F and flash firing to 2750° F. Unit is a Globar element furnace of the manual pusher type, designed for batch treatment on a "straight-line," three zone system.

Work moves from the purge or preheat chamber, through the high



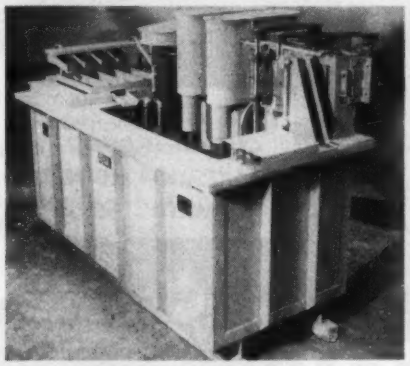
temperature area and then through the water-cooled cooling zone. Both doors are counterbalanced and have automatically operated flame curtains which prevent contamination of the furnace atmosphere when the doors are open. Adjustable silicon carbide doors are provided between the preheat and high temperature zones, as well as between the high temperature and cooling sections. A transformer with dual, dead-front, multitap, voltage regulating switches is provided, plus a magnetic contractor and automatic temperature controllers and recorders, as required. High temperature zone area measures 4 x 4 x 12 inches.

Check No. 1 on Reply Card for more Details

Quench Furnace

Rapid and uniform cooling of the work is possible in the isothermal quench furnace announced by Ajax Electric Co. Inc., Frankford and Delaware Aves., Philadelphia 23, Pa. This is accomplished by providing a vigorous, upward flow of molten salt into headers, into which the hot work is introduced. Salt is circulated by submerged pumps. A separate pump for each header concentrates a great volume of liquid salt into a confined quenching area.

Method for extracting the high temperature chloride salt that is carried over from the austenitizing bath is provided by a separate steel tank built into one end of the unit. A motor driven pump lifts the salt from the isothermal quench bath to a



trough arranged above the separation tank. This trough is cooled constantly by a blast of air which chills the salt to the optimum separating temperature which is always below the operating temperature of the quench bath.

Check No. 2 on Reply Card for more Details

Fork Lift Truck

Having increased capacity with approximately the same dimensions as its predecessor, the redesigned gas-powered Clipper model fork lift truck, announced by Industrial Truck Division, Clark Equipment Co., Battle

Creek, Mich., has a capacity of 2000 pounds. Capacity is figured with load center at 24 inches from the heel of the forks. Truck wheelbase is 36 inches and the frame is slightly wider to provide greater protection for the wheels and give more space for servicing. Longer wheelbase puts additional weight on the drive wheels, the result being increased traction.

Mechanical improvements include a new engine of 30 per cent higher brake horsepower and increased torque, an improved oil sump and valve for operating hydraulic equipment and greater strength and stability in the frame-steering-axle-engine assembly. The floor board is slanted for easier driving.

Check No. 3 on Reply Card for more Details

Second Operation Machine

An air-operated collet which will accurately hold work without distortion even though there is considerable variation in the chucking diameter from one piece to another is incorporated in the model AC59 high speed precision second operation

machine announced by Hardinge Brothers Inc., Elmira, N. Y. In operation, the machine operator closes and opens the collet by actuating a foot pedal. Foot control of the collet leaves operator's hands free to do production work of loading and unloading the collet and feeding the cutting tool slides.

Machine collet operates on standard shop airline pressure. This may be closed or opened instantly when the spindle is at rest or at any spindle speeds to 4000 rpm. Preloaded ball bearing center-drive headstock spindle offers 1-inch round, ⅞-inch hexagon and ¾-inch square collect capacity. Step chuck capacity is up to 6 inches. Eight spindle speeds are offered in either forward or reversed direction from 250 to 4000 rpm.

Check No. 4 on Reply Card for more Details

Belt Conveyor

Equipped with permanently sealed, self-aligning and prelubricated Sealmaster ball bearings, the belt-conveyor carrier, built by Stephens-Adamson Mfg. Co., Aurora, Ill., features light weight construction, low power requirement, interchangeable parts and one piece, welded steel

FULL STRENGTH SOCKET WON'T STRIP OR WEAR
NEVER OUT-OF-ROUND. LEAKPROOF METAL-TO-METAL SEAL
NEW
ALLEN TRU-ROUND DRYSEAL PIPE PLUGS
100% Pressur-Formd

This newest Allen ○ Head product, made of Allenoy steel, meets all the demands of a dryseal plug in applications involving extreme pressure, such as in refrigeration and hydraulic equipment. For use with dryseal taps. No sealing compound required.

It stands up under repeated wrenching as no plug has before. Its Pressur-Formd socket, unweakened by drilling and broaching, is so strong the key will shear before the socket strips.

Pressur-Formd threading insures metal-to-metal contact all the way by producing burnished threads. This method prevents distortion and nicked, imperfect threads which gouge softer metals and impair the seal.

Accurate fit is assured by 360° roundness, and by a perfect taper, at both the pitch and crest diameters.

Here's positive protection against the high cost of leaky or faulty pipe plugs. Get "Tru-Round" Dryseal Pipe Plugs by ordering genuine Allens in the distinctive black and silver box.

Now available in sizes from 1/16" to 1¼". No increase in price. Write us for samples and engineering data.

FOR NORMAL APPLICATIONS Our "Tru-Round" standard pipe plug, also Pressur-Formd, is leakproof, and a sealing compound is not ordinarily needed for pressure-tight joints. Precise roundness and smoother threads make for better seal. Threaded strictly in accordance with Army-Navy Aeronautical Specification AN-P-363. Fully guaranteed.

WARNING
Allen-Type screws aren't necessarily Allen-Made. Get genuine 'Pressur-Formd' Allen ○ Head screws in this black and silver box.

ALLEN ALLEN HEAD
MANUFACTURING COMPANY
Hartford 2, Connecticut, U. S. A.
NEW YORK, CLEVELAND, DETROIT, CHICAGO, LOS ANGELES

ALLEN ..... FOR 40 YEARS THE BUY-WORD FOR SOCKET SCREWS.

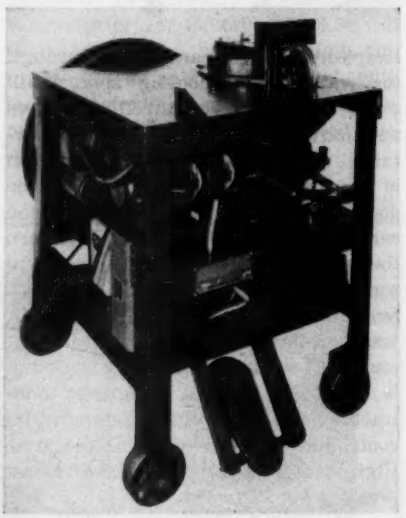
frames. An inverted angle base and specially designed end brackets shed material and keep rollers free. Frames are designed to tilt in direction of belt travel and keep belt centered without guide rollers.

Removable rollers and bearing housings are quickly replaced or interchanged, without tools. Six permanently sealed, self-aligning ball bearing units, independent of their housings, are arranged for one-shot, low pressure lubrication from either side of the conveyor.

Check No. 5 on Reply Card for more Details

Strapping Machine

Designed for high-speed automatic or semiautomatic application of tensional steel strapping to boxes, cartons, bundles, parts, subassemblies or assemblies in manufacturing is the new series of power strapping machines announced by Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill. Electrically and electro-pneumatically powered, the machines perform the four basic operations of strapping — encircling, tensioning, sealing, cutting.

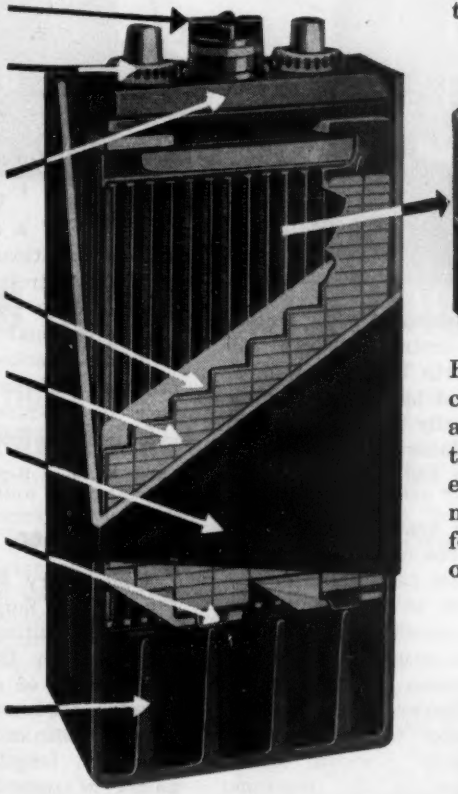


Electrically driven type 3A fully automatic machine for small-dimension items has an automatic strapping head with a timed-cycle electrical control mechanism, actuated by a foot pedal. Encirclement is automatic and strap is tightened to a preset amount of tension. Type 4 semi-

EXIDE-IRONCLAD BATTERIES ARE DIFFERENT!

They are specially designed to provide years of dependable service in all MOTIVE POWER WORK

Storage batteries are called upon to perform many tasks. No single type of battery is adequately suited to all. To meet these numerous requirements, Exide engineers have developed special types, to fit each application.* Among these several types is the specially designed Exide-Ironclad Battery. Details shown below.


VENT PLUG specially designed to prevent escape of electrolyte.
GREASE SEAL RING NUT holds battery elements securely in place . . . prevents creepage of electrolyte . . . keeps tops clean and dry.
SEALED CELL COVER flush with top of jar. Prevents collection of dirt or moisture . . . keeps impurities out of cell . . . eliminates leakage of electrolyte.
SEPARATOR of high porosity, specially treated to last the life of the battery.
NEGATIVE PLATE made extra heavy and built to match the long life of the positive plate.
JAR made of specially tough and durable Giant Compound. Built to withstand the jolts and jars of hard industrial usage.
FEET. Internal short circuits practically eliminated because the two feet on negative plate rest on different ribs from those of the positive plate, and because separators extend below both plates and rest on all four ribs.
RIBS support all plates and separators. Their height provides generous sediment space so that internal cleaning is unnecessary.

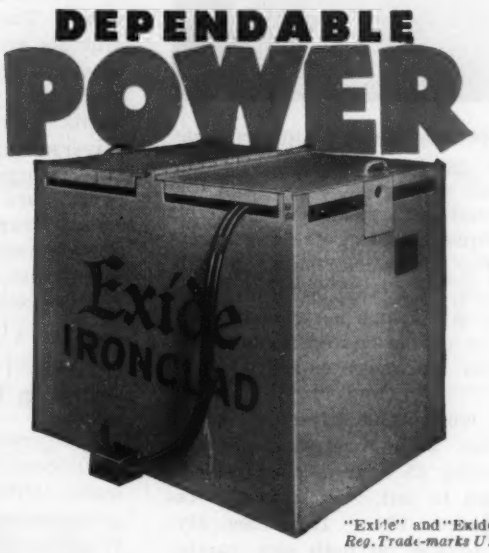
DIFFERENT IN DESIGN
DIFFERENT IN CONSTRUCTION
DIFFERENT IN SERVICE QUALITIES

Chief among these differences is the unique positive plate, an exclusive Exide feature.

EXIDE-IRONCLAD POSITIVE PLATE

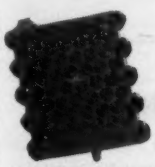
Consists of a series of finely-slotted tubes which contain the active material. So small are these slots that, while permitting easy access of electrolyte, they retard the active material from readily washing out or jarring loose . . . adding considerably to life of plate.

Exide-Ironclad Batteries have ALL FOUR of the characteristics that a storage battery must have to assure maximum performance from battery electric industrial trucks — high power ability, high electrical efficiency, ruggedness and a long life with minimum maintenance. The combination of these four Exide-Ironclad characteristics assures years of dependable day-in, day-out service.



"Exide" and "Exide-Ironclad" *Reg. Trade-marks U. S. Pat. Off.*

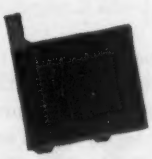
*



DESIGNED FOR STATIONARY USE

The Exide-Manchex Battery has the manchester type positive plate with the lead button construction. Specially designed for stationary use in many classes of industry.

DESIGNED FOR AUTOMOBILE USE



The Exide Automobile Battery has plates of staggered grid construction. Specially designed for use in automobiles, trucks, buses, aircraft and numerous other applications.

1888...DEPENDABLE BATTERIES FOR 61 YEARS...1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

automatic machine for mass-production tying of various-size coils of wire, cable, etc., is both electrically and pneumatically operated. Containers of varying sizes and weights may be strapped with the type 2 machine which has an electrically driven semi-automatic strapping head mounted on a movable skeleton frame ready for conveyor line installation. Lifting of coils during the tying operation is eliminated by a pneumatically operated tilting table top, on a semi-automatic type 1 power strapping machine.

Check No. 6 on Reply Card for more Details

Band Saw

Model 36-L general purpose band saw, built by DoAll Co., Des Plaines, Ill., for sawing of sheet metal and other materials utilizes a narrow hard tooth flexible back buttress blade, which requires no resharpening or

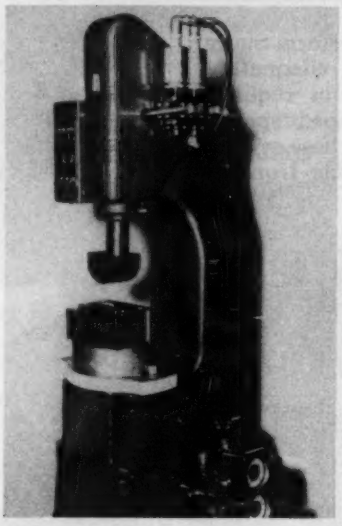
spring temper up to 2 inches wide. Saw is equipped for efficient and safe high speed operation. The fine finish produced reduces the amount of subsequent sanding or filing necessary. For fine work, blades as narrow as ¼-inch may be used which permits a ⅝-inch sawing radius. Throat of the saw is 36 inches deep. Maximum thickness capacity is 20 inches.

Main work table measures 30 × 36 inches with handwheel-operated table tilting 45 degrees to right and 5 degrees to left. An auxiliary table measures 19 × 19 inches. Hydraulic brakes on both saw carrier wheels and complete saw blade guarding provide maxmium operator safety. A dust spout for exhaust connection is provided. Saw can be furnished with either direct or belted drive for single speed sawing or with stepless variable blade speed control over a range of 1000 to 5000 or 2000 to 10,000 fpm.

Check No. 7 on Reply Card for more Details

Air-Hydraulic Press

Electronic timing provides an adjustable preset rate or movement in closing the die or performing an operation on the model 129 drawing,



forming and assembly press, introduced by Taber Instrument Corp., 150 Goundry St., North Tonawanda, N. Y. Press is powered by compressed air with hydraulically controlled ram movement. Pressure of the ram is adjustable from 100 pounds up to 2 tons.

Rate of ram travel may be adjustable from 1000 inches per minute down to 10 inches per minute or less by manipulation of the controlling valves. The electronic control panel provides for one or more stop periods of varying duration for positions to meet the particular work requirements. Provision for a fast tool traverse and slow powerful stroke are incorporated in the machine. Presses are furnished in several models and capacities suitable for slow or very rapid operation and are provided with one or more adjustable ram positioning stops.

Check No. 8 on Reply Card for more Details

Program Controller

Temperature may be controlled by predetermined schedules with the model CPR time-temperature program controller, developed by Taco West Corp., 525 N. Noble St., Chicago 22, Ill. The 8 x 9 x 18-inch Veri-Tron electronic instrument is designed for flush or surface mounting. Upper section contains a modified model C electronic controller with plug-in compartmented construction, high rating snap action control contacts and features uniform control levels independent of line voltage variations.

Lower compartment contains a synchronous motor driven cam, which

by means of a simple backlash-free linkage, positions the control index arm of controller automatically as called for by the cam contour. The cam is of a malleable material which is easily marked with the scriber provided and may be sheared by the user to produce any desired time cycle on the printed disk.

Check No. 9 on Reply Card for more Details

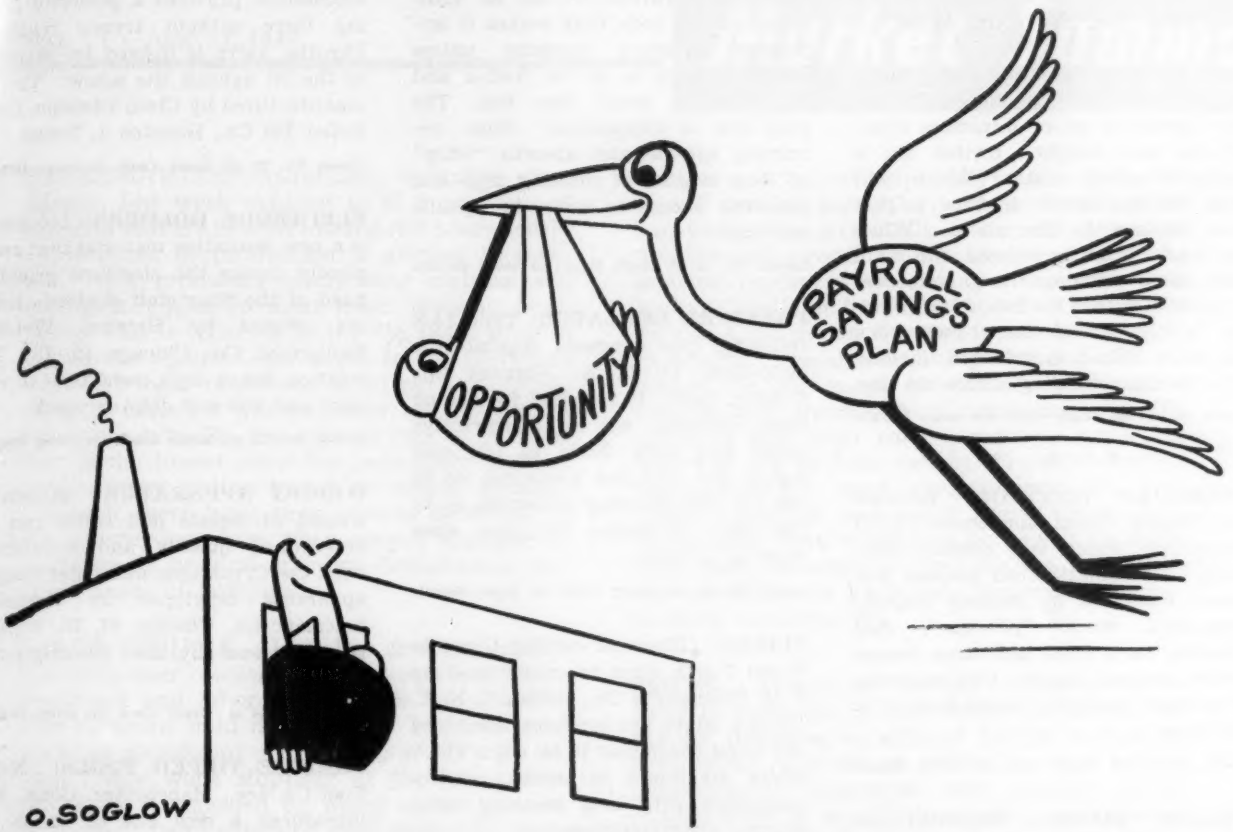
Sheet Feeder

Montgomery & Co. Inc., 53 Park Place, New York 7, N. Y., has developed a tilting sheet feeding attachment for their elevating table. It is made of steel and has eight angular adjustments up to 45 degrees. Width of rack is 20 inches and maximum length is 72 inches. Capacity of rack is 1000 pounds and its weight is 100 pounds. Bracket length is 8 inches.

Check No. 10 on Reply Card for more Details

Fractional HP Motors

Of open, ventilated, sleeve-bearing construction are the new light weight, constant speed fractional horsepower motors designed for business and other types of machines by General Electric Co., Schenectady 5, N. Y. The motors, equipped with double bonded resilient mounting rings, including latches, and three 12-inch leads, are offered in the following ratings: 1/40 hp, 1725/1425 rpm, 115 volts, 60/50 cycles; 1/40 hp, 1425



Put more opportunity into your company's future

WITH THIS FIVE-STEP PROGRAM

Here's an easy-to-follow program that will substantially increase your company's chances for a prosperous future.

Nation-wide experience in 20,000 companies proves that this popular program also pays off handsomely *today*. It increases each participating employee's peace of mind—making him a more contented, more productive worker. It reduces absenteeism, lowers accident rates, increases output, and improves employee-employer relations!

This program is simply a proved formula for building membership in the Payroll Savings Plan—the "automatic" system by which millions of workers are investing in U. S. Savings Bonds every pay-day.

What Are the Five Steps?

The benefits of the Payroll Savings Plan to your company are in proportion to the percentage of employees who participate. Nation-wide experience indicates that 50% of your employees can be persuaded to join *without high-pressure selling*. Here are five steps which have proved to be the "magic formula" for putting over the Plan. They will get results for you:

1. See that a top management man sponsors the Plan.

2. Secure the help of the employee organizations in promoting it.

3. Adequately use posters and leaflets and run stories and editorials in company publications to inform employees of the Plan's benefits to them.

4. Make a person-to-person canvass, once a year, to sign up participants.

These first four steps should win you 40-60% participation. Normal employee turnover necessitates one more step:

5. Urge each new employee, at the time he is hired, to sign up.

Check up on the Payroll Savings Plan in your company. If fewer than half of your employees are participating, you have a lot to gain by following the five-step program outlined here. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bond Division. While it's on your mind, why not call him right now? Or write the Treasury Department, Washington 25, D. C.

Are You With It?

In the current national Savings Bonds campaign, May 16-June 30, the Treasury Department asks each company operating the Payroll Savings Plan to canvass all employees, with the goal of having at least half of them signed up by the end of the month. This advertisement tells how you can achieve that goal most easily.

The Treasury Department acknowledges with appreciation the publication of this message by

STEEL

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.

rpm, 115 volts, 25 cycles; 1/20 hp, 3450/2875 rpm, 115 volts, 60/50 cycles.

A specially designed externally mounted starting switch permits the new motor to be of minimum overall size and weight. Switch has a thermal cutout feature which will open the line circuit in time to prevent damage to the motor. When the start button is pressed, the main and start windings are connected in parallel across the line. Start winding is cut out of the circuit when the start button is released, leaving only the main winding across the line.

Check No. 11 on Reply Card for more Details

• • •

OVERLOAD CONTROL: Brinnell Co., Granby, Conn., announces PN123 Protectron which will combat jamming in automatic feed presses and eyelet machines by sensing slightly over-sized stock "pile-ups", dull punches, hard stock and other causes before damage occurs. Unit operates on normal operating loads from 1 to 100 amp.

Check No. 12 on Reply Card for more Details

FILTER CLOTH: Identified as specification 8700, a metal filter cloth is offered by Michigan Wire Cloth Co., Detroit, Mich. Uses include filtering fuel for jet propulsion engines, for diesel injection fuel systems, and chemical process filtering.

Check No. 13 on Reply Card for more Details

ELECTRIC DRILL: No. 24A ¼-inch electric drill is announced by Stanley Electric Tools, New Britain, Conn., for production work wherever a light weight, small size drill is required. Built with a surplus power for drilling in metal, wood and composition materials, it can be used at full load for continuous drilling without stalling. Speeds are 1800 rpm, no load; 1100 rpm, full load.

Check No. 14 on Reply Card for more Details

VIBRATION DAMPENER: Designated as Shock Stops, a new type of rubber vibration dampener with a semipneumatic action are offered by Connecticut Hard Rubber Co., New Haven 9, Conn. They are placed between the base or feet of the equipment and the floor or foundation. Stops are available in 18 x 18 inch square sheets that may be cut to required size and also in round shapes 3¼ and 2¼ inch in diameter.

Check No. 15 on Reply Card for more Details

PIPE AND BOLT MACHINE: Two improvements on model A pipe and bolt machine, made by Beaver Pipe Tools Inc., Warren, O., are an automatic switch lock that makes it impossible to start machine unless chuck wrench is in its holder and an eccentric spool pipe rest. The pipe rest is independent from revolving spindle and absorbs "whip" of long lengths of rotating pipe and prevents excessive wear on spindle bearings.

Check No. 16 on Reply Card for more Details

PRESSURE REULATOR: Type 2AX relieving type pressure regulator is announced by C. A. Norgren Co., Denver, Colo. It is suited for use on lines carrying air or noncorrosive gases and such fluids as oil, cold water, etc., for line pressures up to 400 psi and working pressures up to 250 psi. Available for pipe sizes from ¼ to 1 inch.

Check No. 17 on Reply Card for more Details

PLIERS: Diagonal cutting pliers in 6 and 7-inch sizes are announced by J. H. Williams & Co., Buffalo 7, N. Y. Cutting edges are precision machined and hand sharpened to an edge which offers maximum in cutting ability consistent with long wearing, nonnicking characteristics.

Check No. 18 on Reply Card for more Details

SAFEGUARD: To protect commercial-size oil burners from flame failure and to provide automatic programming for these burners, Combustion Control Corp., Cambridge 42, Mass., offers Fireye system FF-1. It includes photoelectric scanner type 45PH5 and programming control type 24PJ8.

Check No. 19 on Reply Card for more Details

SANDER: Model 7025 vertical sander, announced by Aro Equipment Corp., Bryan, O., features speeds adjustable to 5000 rpm. Tool is furnished with a choice of 7-inch backing pad, 4-inch cup grinding wheel with guard, or 4-inch wire brush. Speeds adjusted by throttle control; direction of exhaust can be controlled.

Check No. 20 on Reply Card for more Details

COUPLING: Designated as Mighty Midget, an all rubber center coupling designed for improved power transmission in fractional horsepower motors, is announced by Morse Chain Co., Detroit 8, Mich.

Check No. 21 on Reply Card for more Details

SCREWDRIVER: Scarcely larger than a fountain pen, the Cleco A-1 Midget screwdriver is especially useful on jobs that require continuous driving of screws. Balanced impact mechanism provides a powerful driving force without torque reaction. Throttle valve is opened by pressure of the bit against the screw. Tool is manufactured by Cleco Division, Reed Roller Bit Co., Houston 1, Texas.

Check No. 22 on Reply Card for more Details

ELECTRODE HOLDERS: Lifeguard is a new insulation material that completely covers the electrode gripping head of the Shortstub electrode holders offered by Bernard Welding Equipment Co., Chicago 19, Ill. Insulation has a high resistance to impact and will not chip or crack.

Check No. 23 on Reply Card for more Details

WEIGHT APPARATUS: Molecular weight of liquids and solids can be determined quickly and accurately with the Cryoscopic molecular weight apparatus developed by Precision Scientific Co., Chicago 47, Ill. Weight is determined by the freezing-point method.

Check No. 24 on Reply Card for more Details

CARBIDE TIPPED TOOLS: Nelco Tool Co. Inc., Manchester, Conn., has introduced a new line of stress relieved carbide tipped tools. Basic theory of the tool is to eliminate the brazing strains commonly present in brazed carbide tools. This is accomplished by slash milled design.

Check No. 25 on Reply Card for more Details

CARBON BRICKS: National Carbon Co. Inc., New York 17, N. Y., announces carbon bricks in the large size of 13½ x 6 x 3 inches, weighing 14.4 pounds. They are highly resistant to slag attack and immune to thermal shock.

Check No. 26 on Reply Card for more Details

DRAFTSMAN'S INSTRUMENT: A new draftsman's instrument, designated as Perspect-O-Metric, is announced by Charles Bruning Co. Inc., Chicago 41, Ill. It automatically guides the draftsman's pencil toward the established vanishing points from any position upon the drawing board. Special scales instantly reduce distant portions of the subject to their correct proportions.

Check No. 27 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

STEELMAKING operations, declining since March, last week skidded to 87.5 per cent of capacity and are headed toward still lower levels. Curtailment of production is gaining momentum with producers readjusting melting and rolling schedules to meet lower demand prospects. This is reflected in the 4½ point drop in operations reported last week. In the preceding week the ingot rate stood at 92 per cent, while early in March it was well over 100 per cent of capacity. Actually, the current rate of production is the lowest since the immediate postwar readjustment period based on actual demand, although there have been several occasions in the intervening years when output slumped to lower levels because of labor disturbances and observances of holidays.

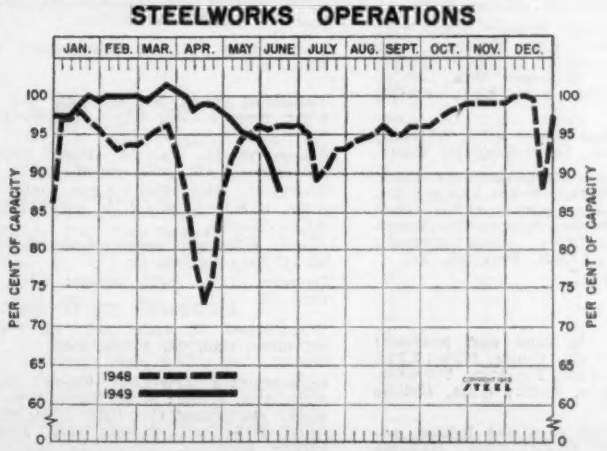
LABOR TROUBLE— How low steel production will drop over coming weeks is uncertain. Work stoppages and labor disturbances, in considerable measure, hold the answer. Mass summer vacation shutdowns also will figure. The scheduled 7-day work stoppage at the coal mines this week is regarded by many as the preview of a much more extended coal strike this summer—a strike which some believe may run as long as 90 days or so. In general the steel and metalworking industries are better prepared for a prolonged mine stoppage than at any time in recent years. It is reliably estimated current steel mill fuel inventories are sufficient to last at least 60 days, possibly longer, depending on steel operations. However, should a major coal strike develop it would undoubtedly have a depressing effect on steel production well before fuel inventories became depleted. Meanwhile, there appears to be less concern over the possibility of a strike by the steelworkers.

DEMAND— Reflecting the extent to which supply and demand have been brought into balance, steel producers will enter third quarter with practically no arrearages for the first time since well before the war. There will be some carryover in sheets, especially cold-rolled, but it will not be particularly large. Public work constitutes the great bulk of current structural activity with overall volume declining. Hot carbon bar producers are closing the quarter with tonnage available for shipment before end of the period. Cold-drawn bar producers continue to experience steadily declining demand. Sheets appear the only major product on which there will be any arrearages of consequence at the quarter's end with some producers reporting they will not be fully caught up on cold-rolled and galvanized sheet commitments. On hot-rolled, electrical and other grade sheets producers have been caught up on orders for some time past. Meanwhile, steel buyers are entering new contracts cautiously, ordering only immediate requirements.

PRICES— Except for further downward revisions in premium prices, chiefly on plates, the market pricewise is without feature currently. Consumers continue to withhold orders in anticipation of reductions over coming weeks though there is no sign from the producers reductions are coming. In fact, sellers insist rising costs make lower prices now out of the question. Nevertheless, buyers generally feel concessions cannot long be avoided, especially should demand continue to slacken.

COMPOSITES— The decline in steelmaking operations has been accompanied by a further slide in scrap prices. STEEL's composite on steelmaking scrap eased further last week to $21.50 from $21.83 for the preceding week and compared with $40.67 for the like week a year ago. Finished steel composite also was lower at $92.09 compared with $92.77 the preceding week and $80.27 for the like week of last year. Other composites held unchanged with semifinished steel, $66.72 against $68.62 a year ago, and steelmaking pig iron, $45.60 compared with $40.49 last year.

STEELWORKS OPERATIONS



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended June 11	Change	Same Week 1948	Same Week 1947
Pittsburgh	83.5	— 4.5*	94.5	100.5
Chicago	97	— 2*	95.5	95
Eastern Pa.	85.5	— 1	89	93
Youngstown	93	—10	103	93
Wheeling	80.5	— 4.5*	97.5	89
Cleveland	98	— 2*	95.5	91.5
Buffalo	101.5	None	98.5	88.5
Birmingham	100	None	100	99
New England	58	None	78	92
Cincinnati	94	+ 4	96	85
St. Louis	73.5	None	89.5	82
Detroit	85	None	100	89
Western	85.5	+ 1	..	..
Estimated national rate	87.5	— 4.5	96	96.5

Based on weekly steelmaking capacity of 1,843,516 net tons for 1949; 1,802,476 net tons for 1948; 1,749,928 tons for 1947. *Revised.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	June 11	June 4	Month Ago May 1949	Year Ago June 1948	5 Years Ago June 1944
Finished Steel	$92.09	$92.77	$93.36	$80.27	$56.73
Semifinished Steel	66.72	66.72	66.72	68.62	36.00
Steelmaking Pig Iron	45.60	45.60	45.66	40.49	23.00
Steelmaking Scrap	21.50	21.83	22.29	40.67	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

May 1949	3.98873c
Apr. 1949	4.02031c
Mar. 1949	4.05098c
May 1948	3.58321c
May 1944	2.44428c

* **STRAIGHT ARITHMETICAL COMPOSITES:** Computed from average industry-wide mill prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (re-rolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading producing points), and on Steelworks Scrap (No. 1 melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composites, dollars per net ton; pig iron and scrap, gross ton.

† **FINISHED STEEL WEIGHTED COMPOSITE:** Computed in cents per pound, mill prices, weighted by actual monthly shipments of following products, representing about 82 per cent of steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Structural shapes; plates, standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip, May, 1949, figure is preliminary.

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton, others dollars per gross ton. Delivered prices represent lowest from mills.

Finished Materials

	June 11, 1949	May 1949	Mar. 1949	June 1948
Steel bars, Pittsburgh mills	3.35c	3.35c	3.43c	2.875c
Steel bars, del. Philadelphia	3.8164	3.8164	3.8164	3.365
Steel bars, Chicago mills	3.35	3.35	3.35	2.875
Shapes, Pittsburgh mills	3.25	3.25	3.275	2.775
Shapes, Chicago mills	3.25	3.25	3.25	2.775
Shapes, del. Philadelphia	3.4918	3.4918	3.4918	2.98
Plates, Pittsburgh mills	3.40	3.40	3.50	2.925
Plates, Chicago mills	3.40	3.40	3.40	2.925
Plates, del. Philadelphia	3.5848	3.6348	3.7256	3.21
Sheets, hot-rolled, Pittsburgh mills	3.25	3.25	3.275	2.775
Sheets, cold-rolled, Pittsburgh	4.00	4.00	4.00	3.50
Sheets, No. 10 galv., Pittsburgh	4.40	4.40	4.40	3.90
Sheets, hot-rolled, Gary mills	3.25	3.25	3.25	2.775
Sheets, cold-rolled, Gary mills	4.00	4.00	4.00	3.50
Sheets, No. 10 galv., Gary mills	4.40	4.40	4.40	3.90
Strip, hot-rolled, Pittsburgh mills	3.25	3.25	3.40	3.05
Strip, cold-rolled, Pittsburgh mills	4.375	4.375	4.375	3.775
Bright basic wire, Pittsburgh	4.15	4.15	4.255	3.725
Wire nails, Pittsburgh mills	5.15	5.15	5.525	5.125
Tin plate, per base box, Pitts. dist.	$7.75†	$7.75†	$7.75†	$6.70

Semifinished

Sheet bars, mill	$67.00*	$67.00*	$67.00*	$60.00
Slabs, Chicago	52.00	52.00	52.00	45.00
Rerolling billets, Pittsburgh	52.00	52.00	56.20	45.00
Wire rod 7/32 to ¼-inch, Pitts. dist.	3.775c	3.775c	3.775c	3.175c

* Nominal. † 1.50 lb coating.

Pig Iron

	June 11, 1949	May 1949	Mar. 1949	June 1948
Bessemer, del. Pittsburgh (N.&S. sides)	$48.08	$48.08	$48.08	$44.08
Basic, Valley	46.00	46.00	46.00	39.00
Basic, eastern, del. Philadelphia	49.39	49.39	50.3002	42.17
No. 2 fdry., del. Pgh. (N.&S. sides)	47.58	47.58	47.58	43.58
No. 2 fdry., del. Philadelphia	49.89	49.89	50.8002	42.67
No. 2 foundry, Chicago	46.25	46.25	46.25	39.00
No. 2 foundry, Valley	46.50	46.50	46.50	39.50
Southern No. 2 Birmingham	39.38	39.88	43.38	39.38
Southern No. 2 del. Cincinnati	45.43	45.93	49.43	45.09
Malleable, Valley	46.50	46.50	46.50	39.50
Malleable, Chicago	46.50	46.50	46.50	39.50
Charcoal, low phos., fob Lyles, Tenn.	66.00	66.00	66.00	58.00
Ferromanganese, f.o.b. Etna, Pa.	175.00	175.00	170.20	151.15*

* F.o.b. cars Pittsburgh.

SCRAP

Heavy melt. steel, No. 1, Pittsburgh	$23.00	$23.25	$36.30	$40.25
Heavy melt. steel, No. 2, E. Pa.	18.25	19.56	29.80	39.00
Heavy melt. steel, No. 1, Chicago	21.50	21.50	33.30	39.25
Heavy melt. steel, No. 1 Valley	22.00	22.00	35.85	40.25
Heavy melt. steel, No. 1 Cleveland	18.50	18.50	34.10	39.75
Heavy melt. steel, No. 1, Buffalo	21.25	22.81	35.95	43.00
Rails for rerolling, Chicago	27.75	27.75	43.85	53.75
No. 1 cast, Chicago	25.50	27.50	39.20	68.38

COKE

Connellsville, beehive furnace	$14.00	$14.25	$14.50	$13.00
Connellsville, beehive foundry	16.25	16.75	17.00	15.22
Chicago, oven foundry, ovens	20.40	20.40	20.40	19.50

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, nom.; offered at $65 per net ton. Forging quality, $50 per net ton, mill.

Alloy Steel Ingots: $51 per net ton, mill.

Rerolling Billets, Blooms, Slabs: $52 per net ton, mill, except: $57, Conshohocken, Pa.

Forging Quality Billets, Blooms, Slabs: $61 per net ton, mill, except: $63, Conshohocken, Pa., mill.

Alloy Billets, Slabs, Blooms: Rerolling quality, $63 per net ton, mill except: $65, Conshohocken, Pa.

Sheet Bars: $67 nom., per net ton, mill; sales in open market $65-$70 per gross ton.

Skelp: 3.25c per lb, mill.

Tube Rounds: $76 per net ton, mill; some sellers quoting up to $120 per gross ton.

Wire Rods: Basic and acid open-hearth, 7/32 & 5/8-inch, inclusive, 3.40c per lb, mill, except: 3.65c, Struthers, O.; 3.70c, Worcester, Mass.; 4.05c, Pittsburg, Calif.; 4.10c, Los Angeles. Basic open-hearth and bessemer, 7/32 to 47/64-in., inclusive, 3.50c, Sparrows Point, Md.

Bars

Hot-Rolled Carbon Bars (O.H. only; base 20 tons): 3.35c, mill, except: 3.50c, Atlanta; 3.55c, Ecorse, Mich.; 4.00c Fontana, Calif.; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, S. San Francisco, Los Angeles, Niles, Calif.; Portland, Oreg., Seattle; 4.20c, Kansas City, Mo.; 4.25c, Minnequa, Colo.

Rail Steel Bars: (Base 10 tons): 3.35c Huntington, W. Va., and Moline, Ill.; 4.00c, Williamsport, Pa.

Hot-Rolled Alloy Bars: 3.75c, mill, except: 4.05c, Ecorse, Mich.; 4.80c, Los Angeles; 4.75c, Fontana, Calif.

Cold-Finished Carbon Bars (Base 40,000 lb and over): 4.00c, mill, except: 3.95c, Pittsburgh, Cumberland, Md.; 4.20c, Indianapolis; 4.30c, Ecorse, Mich.; 4.35c, St. Louis; 4.36c, Plymouth, Mich.; 4.40c, Newark, N. J., Hartford, Putnam, Conn., Mansfield, Readville, Mass.; 4.48c, Camden, N. J.; 5.40c, Los Angeles.

Cold-Finished Alloy Bars: 4.65c, mill, except: 4.85c, Indianapolis; 4.95c, Worcester, Mansfield, Mass., Hartford, Conn.

High-Strength, Low-Alloy Bars: 5.10c, mill, except: 5.30c, Struthers, O., Ecorse, Mich.

Reinforcing Bars (New Billet): 3.35c, mill, except: 3.50c, Atlanta; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, Seattle, S. San Francisco, Los Angeles; 4.25c, Minnequa, Colo. Fabricated: To consumers: 4.25c, mill, except: 5.00c, Seattle.

Reinforcing Bars (Rail Steel): 3.85c, Williamsport, Pa., mill; 3.35c, Huntington, W. Va.

Wrought Iron Bars: Single Refined: 8.60c, (hand puddled), McKees Rocks, Pa.; 9.50c, Economy, Pa. Double Refined: 11.25c (hand puddled), McKees Rocks, Pa.; 11.00c, Economy, Pa. Staybolt: 12.75c, (hand puddled), McKees Rocks, Pa.; 11.30c, Economy, Pa.

Sheets

Hot-Rolled Sheets (18 gage and heavier): 3.25c, mill, except: 3.45c, Ecorse, Mich.; 3.75c, Conshohocken, Pa.; 3.95c, Pittsburg, Torrance, Calif.; 4.15c, Fontana, Calif.; 6.25c, Kansas City, Mo.

Hot-Rolled Sheets (19 gage and lighter, annealed): 4.15c, mill, except: 4.40c, Alabama City, Ala.; 5.05c, Torrance, Calif.; 5.25c, Kokomo, Ind.

Cold-Rolled Sheets: 4.00c, mill, except: 4.20c, Ecorse, Mich., Granite City, Ill.; 4.95c, Pittsburg, Calif.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) 4.40c, mill, except: 4.80c, Kokomo, Ind.; 5.15c, Pittsburg, Torrance, Calif.

Galvannealed Sheets: 4.95c, mill, except: 5.30c, Kokomo, Ind.

Culvert Sheets, No. 16 flat Copper Steel (based on 5-cent zinc): 5.00c, mill, except: 5.40c, Granite City, Ill., Kokomo, Ind.; 5.75c, Pittsburg, Torrance, Calif.

Long Ternes, No. 10 (Commercial quality): 4.80c, mill.

Enameling Sheets, No. 12: 4.40c, mill, except: 4.60c, Granite City, Ill.; 4.70c, Ecorse, Mich.

Silicon Sheets, No. 24: Field: 5.15c, mill. Armature: 5.45c, mill, except: 5.95c, Warren. Electrical: Hot-rolled, 5.95c, mill, except: 6.05c, Kokomo, Ind.; 6.15c, Granite City, Ill.; 6.45c, Warren, O.

Motor: 6.70c mill, except: 6.90c, Granite City, Ill.; 7.20c, Warren, O.

Dynamo: 7.50c, mill, except: 7.70c, Granite City, Ill.

Transformer 72, 8.05c, mill; 65, 8.60c, mill, 58, 9.30c, mill, 52, 10.10c, mill.

High-Strength Low-Alloy Sheets: Hot-rolled, 4.95c, mill, except: 5.15c, Youngstown, Ecorse, Mich. Galvanized (No. 10), 6.75c, mill. Cold-rolled, 6.05c, mill, except: 6.25c, Youngstown, Ecorse, Mich.

Strip

Hot-Rolled Strip: 3.25c mill, except: 3.40c, Atlanta; 3.45c, Ecorse, Mich.; 3.60c, Detroit; 4.00c, Pittsburg, Torrance, Calif.; 4.20c, Kansas City, Mo.; 4.25c, Seattle, San Francisco, Los Angeles; 4.30c, Minnequa, Colo.; 4.65c, Fontana, Calif. One company quotes 4.90c, Pittsburgh base.

Cold-Rolled Strip (0.25 carbon and less): 4.00c, mill, except: 4.00-4.25c, Warren, O.; 4.00-4.50c, New Castle, Pa., Youngstown; 4.15c, Riverdale, Ill.; 4.20c, Ecorse, Mich.; 4.25-4.45c, Detroit; 4.50c New Haven, Conn., Boston; 4.75c, Dover, O., New Kensington, Pa.; 4.50-5.00c, Trenton, N. J.; 4.85c, Wallingford, Conn.; 5.55c, Fontana, Calif.; 5.75c, Los Angeles. One company quotes 4.50c, Pittsburgh base; another, 4.55c, Cleveland or Pittsburgh base, and 4.75c, Worcester, Mass., base.

Cold-Finished Spring Steel: 0.26-0.40 C, 4.00c, mill, except: 4.25c, Dover, O., Chicago; 4.30c, Worcester, Mass.; 4.25-4.50c, New Castle, Pa.; 4.50c, Boston, Youngstown; 4.75c, Wallingford, Conn. Over 0.40 to 0.60 C, 5.50c, mill except: 5.65c, Chicago; 5.75c, Dover, O.; 5.80c, Worcester, Mass., Wallingford, Conn., Trenton, N. J.; 5.95c, Boston; 6.00c, New Castle, Pa. Over 0.60 to 0.80 C, 6.10c, mill, except: 6.25c, Chicago; 6.35c, Dover, O.; 6.40c, Worcester, Mass., Wallingford, Bristol, Conn., Trenton, N. J.; 6.60c, New Castle, Pa. Over 0.80 to 1.05 C, 8.05c, mill, except: 7.85c, Dover, O.; 8.20c, Chicago; 8.35c, Worcester, Mass., Bristol, Conn., Trenton and Harrison, N. J. Over 1.05 to 1.35 C, 10.35c, mill, except: 10.15c, Dover, O.; 10.30c, Wallingford, Conn.; 10.50c, Chicago; 10.65c, Worcester, Mass., Trenton and Harrison, N. J.

Cold-Rolled Alloy Strip: 9.50c, mill except: 9.80c, Worcester, Mass.

High-Strength, Low-Alloy Strip: Hot-rolled, 4.95c, mill, except: 5.15c, Struthers, O., Ecorse, Mich. Cold-rolled, 6.05c, mill, except: 6.25c, Struthers, O., Ecorse, Mich.

Tin, Terne, Plate

Tin Plate: American Coke, per base box of 100 lb, 1.25 lb coating $7.50-$7.70; 1.50 lb coating $7.75-$7.95. Pittsburg, Calif., mill $8.25 and $8.50, respectively, for 1.25 and 1.50 lb coatings.

Electrolytic Tin Plate: Per base box of 100 lb, 0.25 lb tin, $6.45-$6.65; 0.50 lb tin, $6.70-$6.90; 0.75 lb tin, $7.00-$7.20.

Can Making Black Plate: Per base box of 100 lb, 55 to 128 lb basis weight $5.75-$5.85. Pittsburg, Calif., mill, $6.50.

Holloware Enameling Black Plate: 29-gage, 5.30c per pound, except: 5.40c, Sparrows Point, Md.; 5.50c, Granite City, Ill.

Manufacturing Ternes (Special Coated): Per base box of 100 lb, $6.65, except: $6.75 Fairfield, Ala., Sparrows Point, Md.

Roofing Ternes: Per package 112 sheets; 20 x 28 in., coating I.C. 8-lb, $17.50.

Plates

Carbon Steel Plates: 3.40c, mill, except: 3.50c, Coatesville, Pa., Claymont, Del., Conshohocken, Pa., Harrisburg, Pa.; 3.65c, Ecorse, Mich.; 4.00c, Fontana, Calif.; 4.30c, Seattle, Minnequa, Colo.; 4.56c, Houston; 6.25c, Kansas City, Mo.

Floor Plates: 4.55c, mill.

Open-Hearth Alloy Plates: 4.40c, mill, except: 4.50c, Coatesville, Pa., mill.

High-Strength, Low-Alloy Plates: 5.20c mill, except: 5.30c, Conshohocken, Pa.; 5.40c, Youngstown; 5.45c, Ecorse, Mich.; 5.65c, Sharon, Pa.

Shapes

Structural Shapes: 3.25c, mill, except: 3.30c, Bethlehem, Johnstown, Pa., Lackawanna, N. Y.; 3.80c, S. San Francisco, Fontana, Calif.; 3.85c, Torrance, Calif.; 4.15c, Minnequa, Colo.; 4.30c, Seattle, Los Angeles.

Alloy Structural Shapes: 4.05c, mill.
Steel Sheet Piling: 4.05c, mill.

High-Strength, Low-Alloy Shapes: 4.95c, mill, except: 5.05c, Bethlehem, Johnstown, Pa., Lackawanna, N. Y.; 5.15c, Struthers, O.

Wire and Wire Products

Wire to Manufacturers (carloads): Bright, Basic or Bessemer Wire, 4.15c, mill, except: 4.25c, Sparrows Point, Md., Kokomo, Ind.; 4.45c, Worcester, Mass.; 4.50c, Minnequa, Colo., Atlanta, Buffalo; 4.80c, Palmer, Mass.; 5.10c, Pittsburg, Calif.; 5.15c, S. San Francisco. One producer quotes 4.15c, Chicago base; another, 4.50c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Basic MB Spring Wire, 5.55c, mill, except: 5.65c, Sparrows Point, Md.; 5.85c, Worcester, Palmer, Mass., Trenton, N. J.; 6.50c, Pittsburg, Calif.

Upholstery Spring Wire, 5.20c mill, except: 5.30c, Sparrows Point, Md., Williamsport, Pa.; 5.50c, Worcester, Mass., Trenton, N. J., New Haven, Conn.; 6.15c, Pittsburg, Calif.

Wire Products to Trade (carloads): Merchant Quality Wire: Annealed (6 to 8 Gage base), 4.80c, mill, except: 4.90c, Sparrows Point, Md., Kokomo, Ind.; 4.95c, Atlanta; 5.10c Worcester, Mass.; 5.15c, Minnequa, Colo., 5.75c, S. San Francisco, Pittsburg, Calif. One producer quotes 4.80c, Chicago and Pittsburgh base; another, 5.20c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Galvanized (6 to 8 Gage base), 5.25c, mill, except: 5.35c, Sparrows Point, Md., Kokomo, Ind.; 5.40c, Atlanta; 5.55c, Worcester, Mass.; 5.60c, Minnequa, Colo.; 6.20c, Pittsburg, S. San Francisco, Calif. One producer quotes 5.25c, Pittsburgh and Chicago base; another, 5.65c, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Nails and Staples: Standard, cement-coated and galvanized nails and polished and galvanized staples, Col. 103, mill, except: 105, Sparrows Point, Md., Kokomo, Ind., Atlanta; 109, Worcester, Mass.; 110, Minnequa, Colo., Cleveland; 123, Pittsburg, Calif. One producer quotes Col. 103, Chicago and Pittsburgh base; another, Col. 113, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Woven Fence (9 to 15½ Gage, inclusive): Col. 109, mill, except: 111, Kokomo, Ind., Atlanta; 116, Minnequa, Colo.; 132, Pittsburg, Calif. One producer quotes Col. 109, Pittsburgh and Chicago base; another, Col. 114, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Barbed Wire: Col. 123 mill, except: 125, Sparrows Point, Md., Kokomo, Ind., Atlanta; 130, Minnequa, Colo.; 143, Pittsburg, Calif.; 145, S. San Francisco. One producer quotes Col. 123, Chicago and Pittsburgh base.

Fence Posts (with clamps): Col. 114, Duluth; 121, Moline, Ill.; 122, Minnequa, Colo.; 125, Johnstown, Pa.; $120 per net ton, Williamsport, Pa.

Bale Ties (single loop): Col. 106, mill, except: 107, Atlanta; 108, Sparrows Point, Md., Kokomo, Ind.; 113, Minnequa, Colo.; 130, S. San Francisco, Pittsburg, Calif. One producer quotes Col. 115, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Stainless Steels

(Mill prices, cents per pound)

CHROMIUM NICKEL STEELS

Type No.	Bars, Wire Shapes	Strip, Cold-Rolled	Sheets
301	28.50	30.50	37.50
302	28.50	33.00	37.50
303	31.00	36.50	39.50
304	30.00	35.00	39.50
316	46.00	55.00	53.00
321	34.00	44.50	45.50
347	38.50	48.50	50.00

STRAIGHT CHROMIUM STEELS

410	22.75	26.50	32.00
416	23.25	28.25	32.50
430	23.25	27.00	34.75
446	32.50	60.00	46.50

STAINLESS-CLAD STEELS

	Plates —Cladding—		Sheets —Cladding—	
	10%	20%	10%	20%
302	....	....	19.75	21.50
304	22.50	26.50	20.75	22.50
310	32.50	36.50	....	....
316	27.00	31.00	26.00	28.00
321	23.50	27.50	....	....
347	25.00	29.00	24.00	26.00
405	18.75	24.75	....	....
410	18.25	24.25	....	....
430	18.25	24.25	....	....

Tool Steels

Tool Steel: Cents per pound, producing plants; reg. carbon 19.00c; extra carbon 22.00c; special carbon 26.50c; oil-hardening 29.00c; high carbon-chromium 52.00c; chrome hot work, 29.00c.

W	Cr	V	Mo	Co	Base Per lb
18	4	1	...	...	90.50c
18	4	2	...	...	102.50c
18	4	3	...	...	114.50c
18	4	2	...	9	168.50c
1.5	4	1	8.5	...	65.00c
6.4	4.5	1.9	5	...	69.50c
6	4	3	6	...	88.00c

For prices of bolts, nuts, rivets and washers please refer to June 6 issue, Page 153.

Tubular Goods

Standard Steel Pipe: Mill prices in carlots, threaded and coupled, to consumers about $200 a net ton. Discounts from base follow:

In.	Butt Weld Blk.	Gal.	In.	Butt Weld Blk.	Gal.
⅛	39½–	11–	1	46½–	30½–
	41½	13		48½	32½
¼	37½–	13–	1¼	47–	31–
	39½	15		49	33
⅜	34–	9½–	1½	47½–	31½–
	36	11½		49½	33½
½	41–	23½–	2	48–	32–
	43	25½		50	34
¾	44–	27½–	2½, 3..	48½–	32½–
	46	29½		50½	34½
			3½ & 4,	44½	28

In.	Lap Weld Blk.	Gal.	Elec. Weld Blk.	Gal.	Seamless Blk.	Gal.
2	40½	24	38½	22	28–	11½–
					38½	22
2½	44½	28	41½	25	33½–	17–
					41½	25
3	44½	28	41½	25	36–	19½–
					41½	25
3½&4	42½–	25–	43½	27	38½–	22–
	46½	30			43½	27
5 & 6	42½–	25–	43½	27	43½	27
	44½	28				
7	....	....	....	....	43½	26

Line Steel Pipe: Mill prices in carlots to consumers about $200 a net ton.

In.	Butt Weld Blk.	Gal.	In.	Butt Weld Blk.	Gal.
⅛	40½	12	1¼	46–	31–
¼	38½	14		48	32
⅜	35	10½	1½	46½–	31½–
½	40–	23½–		48½	32½
	42	24½	2	47–	32–
¾	43–	27½–		49	33
	45	28½	2½ & 3	47½–	32½–
1	45½–	30½–		49½	33½
	47½	31½	3½ & 4.	43½	27

In.	Lap Weld Blk.	Gal.	Elec. Weld Blk.	Gal.	Seamless Blk.	Gal.
2	39½	23	37½	21	27–	10½–
					37½	21
2½	43½	27	40½	24	32½–	16–
					40½	24
3	43½	27	40½	24	35–	18½–
					40½	24
3½-4	41½–	27½–	42½	26	37½–	21–
	45½	29			42½	26
5 & 6	41½–	27–	42½	26	42½	26
	43½	27½				
8	45½	28	44½	27	44½	27
10	45	27½	44	26½	44	26½
12	44	26½	43	25½	43	25½

Standard Wrought Iron Pipe: Mill price in carlots, threaded and coupled, to consumers about $200 a net ton.

In.	Butt Weld Blk.	Gal.	In.	Lapp Weld Blk.	Gal.
⅜	+59	+90½	1¼	+22	+47½
½	+20	+47½	1½	+15½	+40
¾	+10	+36½	2	+ 7½	+31
1 and			2½-3	+ 5	+26½
1¼	+ 4	+27½	4	List	+20½
1½	— 2	+24	4½-8	+ 2	+22
2	— 2½	+23½	9-12.	+12	+31½

Boiler Tubes: Net base c.l. prices, dollars per 100', mill; minimum wall thickness, cut lengths 4 to 24", inclusive.

O.D. IN.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	11.50	13.39	13.00	13.00
1¼	13	13.62	15.87	13.21	15.39
1½	13	15.05	17.71	14.60	17.18
1¾	13	17.11	20.15	16.60	19.54
2	13	19.18	22.56	18.60	21.89
2¼	13	21.37	25.16	20.73	24.40
2¼	12	23.54	27.70	22.83	26.88
2½	12	25.79	30.33	25.02	29.41
2¾	12	27.33	32.14	26.51	31.18
3	12	28.68	33.76	27.82	32.74
3¼	11	33.39	39.29	32.39	38.11
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78
4½	9	58.99	69.42	....	....
5	9	68.28	80.35	....	....
6	7	104.82	123.33	....	....

Pipe Cast Iron: Class B, 6-in. and over, $82.50-$93.50 per net ton, Birmingham; $87.50, Burlington, N. J.; 4-in. pipe, $5 higher; Class A pipe, $5 a ton over Class B.

Rails, Supplies

Rails: Standard, over 60-lb; $3.20 per 100 lb mill, except: $3.30, Minnequa, Colo.
Light (billet): $3.55 per 100 lb, mill, except: $4.25, Minnequa, Colo.
Light (rail steel): $3.55 per 100 lb, Williamsport, Pa., Huntington, W. Va.
Railroad Supplies: Track bolts, treated: $8.50 per 100 lb, mill. Untreated: $8.25, mill.
Tie Plates: 4.05c mill, except: 4.20c, Pittsburg, Torrance, Calif.; 4.50c, Seattle.
Splice Bars: 4.25c, mill.
Standard Spikes: 5.35c, mill.
Axles: 5.20c, mill.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., furnace	$48.00	$48.50	$49.00	$49.50
Newark, N. J., del.	50.5334	51.0334	51.5334	52.0334
Brooklyn, N. Y., del.	....	52.634	53.134	....
Birmingham, furnace	38.88	39.38	....	....
Cincinnati, del.	....	45.43	....	....
Buffalo, furnace	46.00	46.50	47.00	....
Boston, del.	54.92	55.42	55.92	....
Rochester, del.	47.95	48.45	48.95	....
Syracuse, del.	49.39	49.89	50.39	....
§**Chicago,** district furnaces	46.00	46.00-46.50	46.50	47.00
Milwaukee, del.	47.82	47.82-48.32	48.32	48.82
Muskegon, Mich., del.	....	51.28-51.78	51.78	....
Cleveland, furnace	46.00	46.50	46.50	47.00
Akron, del.	48.3002	48.8002	48.8002	49.3002
Duluth, furnace	....	46.50	46.50	47.00
Erie, Pa., furnace	46.00	46.50	46.50	47.00
Everett, Mass., furnace	....	52.50	53.00	....
Geneva, Utah, furnace	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.0578	....	....
Portland, Oreg., del.	....	54.0578	....	....
Los Angeles, San Francisco	53.5578	54.0578	....	....
Granite City, Ill., furnace	47.90	48.40	48.90	....
St. Louis, del.	49.40	49.90	50.40	....
Ironton, Utah, furnace	47.00	47.50	....	....
Lone Star, Tex., furnace	46.00	†46.50	....	....
Gulf ports, del.	50.50	51.00	....	....
‡**Neville Island, Pa.,** furnace	46.00	46.50	46.50	47.00
Pittsburgh, del., N.&S. Sides	47.08	47.58	47.58	48.08
Pittsburgh (Carnegie), furnaces	46.00	....	....	47.00
Sharpsville, Pa., furnace	46.00	46.50	46.50	47.00
Steelton, Pa., furnace	48.00	48.50	49.00	49.50
Struthers, O., furnace	46.00	....	....	....
Swedeland, Pa., furnace	48.00	48.50	49.00	49.50
Philadelphia, del.	49.39	49.89	50.39	50.89
Toledo, O., furnace	46.00	46.50	46.50	47.00
Cincinnati, del.	50.8230	51.3230	....	....
Troy, N. Y., furnace	48.00	48.50	49.00	....
Youngstown, O., furnace	46.00	46.50	46.50	47.00
Mansfield, O., del.	50.1022	50.6022	50.6022	51.1022

† Low phosphorus southern grade.

‡ To Neville Island base add: $0.86 for McKees Rocks, Pa.; $1.31 Lawrenceville, Homestead, McKeesport, Monaca; $1.73 Verona; $1.94 Brackenridge; $1.08 for Ambridge and Aliquippa.

§ Includes, in addition to Chicago, South Chicago, Ill., East Chicago, Gary and Indiana Harbor, Ind.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent Si (base)..$59.50
6.51-7.00.. 60.50 9.01- 9.50. 65.50
7.01-7.50.. 61.50 9.51-10.00. 66.50
7.51-8.00.. 62.50 10.01-10.50. 67.50
8.01-8.50.. 63.50 10.51-11.00. 68.50
8.51-9.00.. 64.50 11.01-11.50. 69.50
F.o.b. Jackson, O., per gross ton. Buffalo furnace $1.25 higher.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus $1 per gross ton.

Electric Furnace Silvery Pig Iron Si 14.01-14.50%, $78.50 furnace, Niagara Falls; $80 open-hearth and foundry grade, Keokuk, Iowa, or Wenatchee, Wash., freight allowed to normal trade area. 12½ lb piglets, $85, Keokuk, Iowa, freight allowed to normal trade area. Add $1 a ton for each additional 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 a ton for 0.45% max. P.

Charcoal Pig Iron

Semi-cold blast, low phosphorous. F.o.b. furnace, Lyles, Tenn.....$66 (For higher silicon iron a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Low Phosphorus

Steelton, Pa., Troy, N. Y., $54; Philadelphia, $56.9786 del. Intermediate phosphorus, Central furnace, Cleveland, $51.

Electrodes

(Threaded, with nipples, unboxed)

Diam. (Inches)	Length	Cents per lb, f.o.b. plant
Graphite		
17, 18, 20	60, 72	16.00
8 to 16	48, 60, 72	16.50
7	48, 60	17.75
6	48, 60	19.00
4, 5¼	40	19.50
3	40	20.50
2½	24, 30	21.00
2	24, 30	23.00
Carbon		
40	100, 110	7.50
35	100, 110	7.50
30	84, 110	7.50
24	72 to 104	7.50
17 to 20	84, 90	7.50
14	60, 72	8.00
10, 12	60	8.25
8	60	8.50

Fluorspar

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.

Metallurgical Coke

Price per Net Ton

Beehive Ovens	
Connellsville, furnace	$13.00-15.00
Connellsville, foundry	16.00-16.50
New River, foundry	18.00
Wise county, foundry	15.35
Wise county, furnace	14.60
Oven Foundry Coke	
Kearney, N. J., ovens	$22.00
Everett, Mass., ovens, New England, del.‡	22.70
Chicago, ovens	20.40
Chicago, del.	†21.85
Detroit, del.	24.16
Terre Haute, ovens	20.20
Milwaukee, ovens	21.15
Indianapolis, ovens	19.85
Chicago, del.	23.19
Cincinnati, del.	22.66
Detroit, del.	23.61
Ironton, O., ovens	19.40
Cincinnati, del.	21.63
Painesville, O., ovens	20.90
Buffalo, del.	23.42
Cleveland, del.	22.55
Erie, del.	22.70
Birmingham, ovens	17.70
Philadelphia, ovens	20.45
Swedeland, Pa., ovens	20.40
Portsmouth, O., ovens	19.50
Detroit, ovens	20.65
Detroit, del.	•21.70
Buffalo, del.	22.75
Flint, del.	22.98
Pontiac, del.	21.98
Saginaw, del.	23.30

Includes representative switching charge of: *, $1.05; †, $1.45. ‡ Or within $4.03 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens (Price effective as of Aug. 5)

Pure benzol	20.00
Toluol, one degree	19.00-23.50
Industrial xylol	20.50-26.50
Per ton bulk, ovens	
Sulphate of ammonia	$45.00
Per pound, ovens (Effective as of Oct. 1)	
Phenol, 40 (carlots, returnable drums)	13.50
Do., less than carlots	14.25
Do., tank cars	12.50
(Effective as of Oct. 25)	
Naphthalene flakes, balls, bbl to jobbers, "household use"	13.75

Refractories

(Prices per 1000 brick, f.o.b. plant)

Fire Clay Brick

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $100. Hard-fired, $135 at above points.

High-heat Duty: Salina, Pa., $85; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $80.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $74.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., Ottawa, Ill., $66.

Ladle Brick

Dry Press: $55, Freeport, Merill Station, Clearfield, Pa.; Chester, New Cumberland, W. Va.; Irondale, Wellsville, O.

Wire Cut: $53, Chester, New Cumberland, W. Va.; Wellsville, O.

Malleable Bung Brick

St. Louis, Mo., Olive Hill, Ky., Ottawa, Ill., $90; Beach Creek, Pa., $80.

Silica Brick

Mt. Union, Claysburg, or Sproul, Pa., Ensley, Ala., $80; Hays, Pa., $85; Joliet or Rockdale, Ill., E. Chicago, Ind., $89; Lehi, Utah, Los Angeles, $95.

Eastern Silica Coke Oven Shapes: Claysburg, Mt. Union, Sproul, Pa., Birmingham, $80.

Illinois Silica Coke Oven Shapes: Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $81.

Basic Brick

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; Chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

Magnesite

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; Bulk, $30.50-31.00; single paper bags, $35.00-35.50.

Dolomite

(Base prices per net ton)

Domestic, dead-burned bulk: Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural)

Lower Lake Ports

(Any increase or decrease in R.R. freight rates, dock handling charges and taxes thereon effective after Dec. 31, 1948, are for buyer's account.)

Old range bessemer	$7.60
Old range nonbessemer	7.45
Mesabi bessemer	7.35
Mesabi nonbessemer	7.20
High phosphorus	7.20

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% concentrates, contract	16.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
Brazil iron ore, 68-69%	19.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26-$28

Manganese Ore

Long term contracts, involving large tonnages, prices are nominal; nearby, 48%, duty paid, 81.8c-83.8c per long ton unit, c.i.f. United States ports; prices on lower grades adjusted to manganese content and impurities.

Chrome Ore

Gross ton f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S.C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African	
48% 2.8:1	37.50
48% 3:1	39.00
48% no ratio	31.00
South African (Transvaal)	
44% no ratio	$25.50-$26.00
45% no ratio	26.50
48% no ratio	29.00-30.00
50% no ratio	29.50-30.50
Brazilian—nominal	
44% 2.5:1 lump	$33.65
Rhodesian	
45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00
Domestic (seller's nearest rail)	
48% 3:1	$39.00

Molybdenum

Sulphide conc., lb, Mo., cont., Mines	$0.90

WAREHOUSE STEEL PRICES

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga. and Heavier*	C.R. 15 Ga.	Galv. 10 Ga.†	H.R.*	C.R.*	H. R. Rds.	C. F. Rds.	H.R. Alloy 41408		Carbon	Floor
New York (city)	6.00‡	6.51	7.15	5.82	...	5.77	6.56	8.68	5.53	5.90	7.36
New York(c'try)	5.80‡	6.31	6.95	5.62	...	5.57	6.36	8.48	5.33	5.70	7.16
Boston (city) ..	6.10‡	6.70**	7.16	5.80	...	5.67	6.42	8.72	5.57	5.95	7.40
Boston (c'try) .	5.95‡	6.55**	7.01	5.65	...	5.52	6.27	8.57	5.42	5.80	7.25
Phila. (city)...	5.80	6.39	6.83	5.55	...	5.55	...	8.40	5.25	5.50	6.70
Phila. (c'try)..	5.65	6.24	6.68	5.40	...	5.40	...	8.25	5.10	5.35	6.55
Balt. (city)....	5.46	6.36	7.06	5.52	...	5.57	6.31	...	5.51	5.71	7.16
Balt. (c'try)...	5.31	6.21	6.91	5.37	...	5.42	6.16	...	5.36	5.56	7.01
Norfolk, Va. ..	5.80‡	...	...	...	...	6.05	7.05	...	6.05	6.05	7.55
Wash. (w'hse).	6.07‡	...	...	5.83	...	5.88	6.62	...	5.82	6.02	7.47
Buffalo (del.)..	5.00‡	6.05**	7.85	5.49	6.50	5.20	6.05	10.13	5.25	5.50	7.06
Buffalo (w'hse)	4.85‡	5.90**	7.70	5.34	6.35	5.05	5.90	9.98	5.10	5.35	6.91
Pitts. (w'hse)..	4.85	5.75§*	6.90	5.00	6.00	4.90	5.65	9.20††	4.90	5.05-5.10	6.55
Detroit (w'hse)	5.42	6.22§*	7.43	5.42	6.42-6.73	5.48	5.90	8.44-8.59	5.48	5.67	7.02
Cleveland (del.)	5.00	5.90	6.80-6.91	5.15-5.18	6.15	5.15-5.16	5.60	7.84-8.00	5.15-5.16	5.35-5.36	6.80-6.81
Cleve. (w'hse).	4.85	5.75	6.65-6.76	5.00-5.03	6.00	5.00-5.01	5.45	7.84-7.85	5.00-5.01	5.20-5.21	6.65-6.66
Cincin. (w'hse).	5.26‡	5.94**	6.83	5.38	6.10	5.43	5.94	...	5.43	5.63	7.03
Chicago (city).	5.00-5.20‡	5.90§	7.00	5.00	6.67-6.83	5.05	5.60	7.85§	5.05	5.25	6.70
Chicago (w'hse)	4.85-5.05‡	5.75§	6.85	4.85	6.52-6.68	4.90	5.40	7.70§	4.90	5.10	6.55
Milwaukee(city)	5.18-5.38‡	6.08§	7.18	5.18	6.82-7.01	5.23	5.78	8.03§	5.23	5.43	6.88
St. Louis (del.)	5.37	6.27§	7.44	5.34	6.64	5.39	6.19§	6.64	5.39	5.59	7.04
St. L. (w'hse).	5.22	6.12§	7.29	5.19	6.49	5.24	6.04§	6.49	5.24	5.44	6.89
Birm'ham (city)	5.20	...	6.60	5.20	...	5.15	6.83	...	5.15	5.40	7.73§
Birm'ham(c'try)	5.05	...	6.45	5.05	...	5.00	6.68	...	5.00	5.25	7.58§
Omaha, Nebr...	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Los Ang. (city)	6.60	8.05**	8.20	6.80	9.50	6.25	8.20	...	6.10	6.30	8.20
L. A. (w'hse)..	6.45	7.90**	8.05	6.65	9.35	6.10	8.05	...	5.95	6.15	8.05
San Francisco..	6.15§§	7.50§	8.10	6.75§§	8.25§	5.90§§	7.55	10.85§	5.90	6.35	8.10
Seattle-Tacoma.	6.70§‡	9.15§	8.80	6.70§	...	6.20§	8.15§	10.35	6.30§	6.35§	8.40§

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ** 17 gage; ††as annealed.

Base quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 1000 lb and over; galvanized sheets, 450 lb to 1499 lb; §—1500 lb and over; §—1000 to 4999 lb; §—450 to 1499 lb; §—400 to 1499 lb; §—1000 to 1999 lb; §—1000 lb and over; §—300 to 9999 lb; §—1500 to 1999 lb; §—400 to 3999 lb; §§—400 lb and over; §§—500 to 1499 lb.

PRICES OF LEADING FERROALLOY PRODUCTS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si) Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, c.l., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.ob. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10 % C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5 for max 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. Special Grade: (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Carload 2" x D, packed 35.5c per lb of metal, ton lot 37c, less ton 39c. Delivered. Spot, add 2c.

Manganese, Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 35,999 lb, 30c; 36,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17.5%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr. c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk 22.0c per lb of contained Cr, c.l., packed 22.9, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, corload, lump, bulk, max, 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lot 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract, carload, 1" x D; packed, max. 0.50% C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 18.5c per lb of contained Si; packed 19.90-21.70c; ton lot 21.00-22.60c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50%Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5 per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15c per lb of contained Si, carload packed 15.9, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe.) C.l., lump. bulk, regular 19.0c per lb of Si c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.40c per lb of alloy, ton lots packed 8.80c, 200 to 1999 lb 9.15c, smaller lots 9.65c. Delivered. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr.) Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk, 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained. F.o.b. Langeloth, Pa.

(*Please turn to Page 158*)

For prices of other ferroalloy products please refer to May 30 issue, page 126.

Cut Metal Prices to Spur Sales

Copper and zinc sellers lower prices to new postwar lows in effort to stimulate buying, but consumers are still reducing inventories. Production curtailments increase

New York — Metalworking industries are still working toward their goal of smaller inventories of nonferrous metals, as evidenced by continued light purchasing. This, combined with shortened operating schedules at fabricating plants and uncertainty regarding the government's stockpiling program, has weakened the general price tone in metals. Copper and zinc prices declined further last week.

Copper — Prices dropped ⅝-cent further last week to the basis of 17.00c, Connecticut Valley points, a new low since November, 1946, and only 2⅝-cents above the wartime ceiling.

Buying of copper will not be resumed on a large scale until customers' inventories have reached a minimum and their confidence in the price of copper has returned, H. T. Dyett, chairman, Rome Cable Corp., told stockholders at their annual meeting last week.

A. C. Bull, Pioneer Service & Engineering Co., Chicago, said in a report published by the National Association of Purchasing Agents that "it is doubtful if bottom for the copper market will be in sight above 16.00c a pound, even without further deterioration in the basic general economic situation. Prices swing too low, just as they swing too high.

Primary mine producers are curtailing production due to the slump in demand and decline in prices. Anaconda Copper Mining Co. suspended operation of its Belmont copper mine and Orphan Girl zinc mine and temporarily deferred filling and shaft-sinking in progress on its Greater Butte project. Effective as of June 6, operations at Butte, Mont., were placed on a 5-day week basis. This represents the fourth mine suspension in Butte within the last month, including the Lexington and Alice zinc mines.

Phelps Dodge Corp., the nation's second largest copper producer, has closed down copper production at its Bisbee, Ariz., mines, but is continuing production of lead and zinc at these properties. The company has reduced the work-week to 40 hours from 48 hours at its large open-pit copper mines at Morenci and Ajo in Arizona. Previously, the company had closed down its small copper mine in Mexico.

Kennecott Copper Corp., the largest domestic producer, had announced curtailment at its Utah, Ray, Chino and Nevada mines to a basis of operations equivalent to a 40-hour week from a former 48-hour week. On May 1, Calumet & Hecla Consolidated Mining & Smelting Co. closed down its mines in the Michigan peninsula because of the lack of demand and the decline in price.

Industry sources estimate that the mine curtailments already put into effect will reduce domestic copper production about 13,000 tons a month.

Unless there is a marked improvement in demand soon, a more drastic curtailment in production is expected to be put into effect. Slump in the copper mining industry has intensified efforts of some congressmen to bring about restoration of the import duty on copper. Two bills have been introduced in Congress which would place a 2-cent per pound import tax on copper.

Copper and Brass Goods — Scovill Mfg. Co. reduced copper products, brass and other copper-alloy goods to conform to levels of 17.00c for copper and 10.00c for zinc.

Zinc—Initiated by a custom smelter, the price zinc dropped 1¼ cents last week to the basis of 9.50c, East St. Louis. At the new figure, the price has been cut 8 cents a pound from its postwar high and is only 1¼ cents a pound above the wartime ceiling. However, under premium price payments, as much as 15.50c a pound was paid for high-cost zinc production.

The recent slump in demand for zinc was reflected in May statistics. Shipments during that month to domestic users, totaling 35,564 tons, were the smallest for any month since 1939 and compared with 67,291 tons in May, 1948. Export shipments aggregated 5731 tons while shipments for government account totaled 10,643 tons.

U. S. smelter production of slab zinc, including foreign ore processed here, continued at a high rate in May, totaling 77,537 tons against 75,921 tons in April. Stocks of slab zinc held by United States smelters totaled 76,581 tons at the end of May, an increase of 25,599 tons over the Apr. 30 total. Unfilled orders for slab zinc on May 31 amounted to 58,644 tons against 65,713 tons at the end of April.

J. J. Sharkey, Western Cartridge Co. Division of Olin Industries Inc., East Alton, Ill., in a report to the Purchasing Agents Association said in part: "It is expected there may be some improvement in demands for zinc in the last six months of this year and that the government will continue to buy some tonnage for stockpiling purposes. However, there is a possibility that the price may reach lower levels before the market is stabilized."

Canadian Zinc—Consolidated Mining & Smelting Co. of Canada Ltd. reduced its price of zinc ¼-cent, effective as of June 6, to 10.75c a pound for prime western, 11.50c for "A" grade, and 11.75c for special high grade. All prices are in carload lots at Montreal and Toronto.

Lead—Demand for lead continued light last week with only routine business reported at unchanged levels. As in zinc, Mr. Sharkey believes that the price may decline to lower levels before the market is stabilized.

Total stocks of lead held by smelters and refiners as of May 1 increased 17,829 tons to 196,177 tons, the largest reported since 1939, according to the American Bureau of Metal Statistics. Stocks of refined lead increased to 59,540 tons on May 1 from 41,976 tons on Apr. 1.

Tin—Extension of allocation and end-use controls over tin and tin products until June 30, 1950, is provided in S. 1994 introduced by Senator Burnet R. Maybank (Dem. S. C.) and referred to the Senate Banking and Currency Committee. This action resulted from a recommendation by Secretary of Commerce Sawyer that such an extension is necessary to safeguard the strategic stockpile and the national economy. The move came as a surprise because Secretary Sawyer previously had decided that none of the controls specified in Public Law 606 which expires June 30, 1949, now are needed in view of a general easier supply situation; in fact, he had so expressed himself in his seventh quarterly report on the administration of the Second Decontrol Act which was in type before he changed his mind. The change resulted from Mr. Sawyer's fear that the recent Bolivian tin strike threatens our supply of tin and tin ores.

Buys Aluminum Rod Mill

Washington—War Assets Administration has sold the government's aluminum rod and bar mill at Newark, O., to Permanente Metals Corp., Oakland, Calif., for $4.5 million. The facility has been under lease to Permanente and production is expected to start within the next month.

The plant was constructed by the government during the war for the production of 10 million pounds of aluminum blooms and 15 million pounds of rod per month. It has a casting capacity of 40 million pounds per month, which is in excess of rolling capacity. The purchaser has informed WAA that it proposes to use the facilities to produce smaller size rods and bars and has installed a wire and cable mill costing approximately $4 million.

The land and equipment cost the government a reported total of $22,712,371. The estimated physical value of the government-owned property today is $13,165,813. The plant was operated during the war by the Aluminum Co. of America.

Forms Tin Research Institute

Columbus, O.—Tin Research Institute Inc. has been formed here to provide free technical service to tin consumers, according to John Ireland, director of Tin Research Institute of London, England. Robert J. Nekervis has been named supervisor of metallurgical development and Robert M. MacIntosh has been appointed supervisor of chemical development in the new corporation. Both of these men have been associated with Battelle Memorial Institute, where new research projects in tin will be continued.

NONFERROUS METAL PRICES

(Cents per pound, carlots, except as otherwise noted)

Copper: Electrolytic 17.00c, Conn. Valley; Lake, Nom., Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 14.75-15.50c; 88-10-2 (No. 215) 23.50c; 80-10-10 (No. 305) 20.00c; No. 1 yellow (No. 405) 12.25-13.25c.

Zinc: Prime western 9.50c, brass special 10.25c, intermediate 10.50c, East St. Louis; high grade 10.50c, delivered.

Lead: Common 11.85c; chemical, nom.; corroding, 11.95c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, f.o.b. shipping point.

Secondary Aluminum: Piston alloys 15.50-15.75; No. 12 foundry alloy (No. 2 grade) 14.25-14.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 15.50-15.75; grade 2, 14.50-14.75; grade 3, 13.50-13.75; grade 4, 12.50-12.75. Prices include freight at carload rate up to 75 cents per 100 lb.

5% titanium-aluminum alloy No. 1 (low Cu) 31.00; No. 2 (2% Cu) 28.00c, f.o.b. Eddystone, Pa.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 20.50c, f.o.b. Freeport, Tex.

Tin: Grade A, 99.8% or higher (including Straits) $1.03; grade B, 99.8% or higher, not meeting specifications for grade A, with 0.05% max. arsenic, $1.028; grade C, 99.65-99.79%, incl., $1.024; 99.5-99.649% $1.024, grade F, 98-98.999% $1.015 for tin content. Prices are ex-dock, New York, in 5-ton lots.

Antimony: American 99-99.8% and over but not meeting specifications below, 38.50c; 99.8% and over (arsenic 0.05% max.; other impurities, 0.1% max.) 39.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; "XX" nickel shot, 43.50c; "F" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York $81-$84 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2 del.; special or patented shapes, $2.15.

Cobalt: 97-98%, $1.80 per lb for 550 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 71.50c per ounce.

Platinum: $72-$75 per ounce.

Palladium: $24 per troy ounce.

Iridium: $100-$110 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 31.68; yellow brass 29.10; commercial bronze, 95%, 31.73; 90%, 31.38; red brass, 85%, 30.51; 80%, 30.17; best quality, 29.84; nickel silver, 18%, 42.42; phosphor-bronze, grade A, 5%, 50.82.

Rods: Copper, hot rolled 27.53; cold drawn 28.78; yellow brass, free cutting, 23.69; commercial bronze, 95% 31.42; 90% 31.07; red brass 85% 30.20; 80% 29.86.

Seamless Tubing: Copper 31.72; yellow brass 32.11; commercial bronze 90% 34.04; red brass 85% 33.42; 80% 33.08.

Wire: Yellow brass 29.39; commercial bronze, 95% 32.02; 90% 31.67; red brass, 85% 30.80; 80% 30.46; best quality brass 30.13.

Copper Wire: Bare soft, f.o.b., eastern mills, 100,000 lb lots, 23.80, l.c.l. 24.42½, c.l. 23.92½; weatherproof, f.o.b. eastern mills, 100,000 lb lots, 25.60, l.c.l. 26.22½; magnet, delivered, c.l. 28.00, 15,000 lb or more 28.25, l.c.l. 28.75.

ALUMINUM

Sheets and Circles: 2s and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.076-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0.038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-20	36.8	33.4	39.5
0.008-0.0075	12-20	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	48.0	...	...
0.156-0.203	41.0	...	...
0.219-0.313	38.0	...	...
0.344	37.0	...	47.0
0.375	36.5	45.5	44.0
0.406	36.5	...	...
0.438	36.5	45.5	44.0
0.469	36.5	...	...
0.500	36.5	45.5	44.0
0.531	36.5	...	...
0.563	36.5	...	41.5
0.594	36.5	...	...
0.625	36.5	43.0	41.5
0.656	36.5	...	...
0.688	36.5	...	41.5
0.750-1.000	35.5	40.5	39.0
1.063	35.5	...	37.5
1.125-1.500	34.5	39.0	37.5
1.563	34.5	...	37.5
1.625	33.5	...	36.5
1.688-2.000	33.5	...	...
2.125-2.500	32.5	...	...
2.625-3.375	31.5	...	...

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $17.00 per cwt; add 50c per cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $17.00 per cwt. Traps and Bends: List price plus 45%.

ZINC

Sheets, 15.50c, f.o.b. mill, 36,000 lb and over, Ribbon zinc in coils, 14.75c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 13.75c; over 12-in., 14.75c.

NICKEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled, 60.00c. Strip, cold-rolled 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, f.o.b. mill.)

Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c, Seamless tubes, 80.00c. Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb, 35.00-36.00c.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
May Avg..	18.045	13.566	11.880	103.000	17.000	38.500	40.000	71.500
Apr. Avg..	21.774	15.017	14.085	103.000	17.000	38.500	40.000	71.500
May 24 ...	18.00	12.85	11.00	103.00	17.00	38.50	40.00	71.50
May 25 ...	17.625	12.85	11.00	103.00	17.00	38.50	40.00	71.50
May 26-31.	17.625	11.85	11.00	103.00	17.00	38.50	40.00	71.50
June 1 ...	17.625	11.85	11.00	103.00	17.00	38.50	40.00	71.50
June 2-7 ..	17.625	11.85	10.75	103.00	17.00	38.50	40.00	71.50
June 8 ...	17.000	11.85	10.00	103.00	17.00	38.50	40.00	71.50
June 9 ...	17.000	11.85	9.50	103.00	17.00	38.50	40.00	71.50

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9%, flake, f.o.b. Philadelphia, carloads, 26.00c; 5 tons and over 26.50c; 1 to 5 tons, 27.00c; less than 1 ton, 27.50c.

Copper Anodes: Base, 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat untrimmed 23.84c; oval 27.84c; cast 26.37c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 48.00c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,900 lb, 17.00c, f.o.b. Niagara Falls, N. Y.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 26.25c; over 250 lb, 25.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 56.00c; 10,000 to 30,000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 10 lb, 64.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 26.50c; 400-lb bbl, 24.50c, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, 119.00c; 500 to 999 lb, 119.50c; 200 to 499 lb, 120.00c; less than 200 lb, 121.50c; ball, 1000 lb and over, 121.25c; 500 to 999 lb, 121.75c; 200 to 499 lb, 122.25c; less than 200 lb, 123.75c f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 71.8c; 100 or 300 lb drums only, 100 to 500 lb, 63.6c; 600 to 1900 lb, 61.2c; 2000 to 9900 lb, 59.4c, f.o.b. Sewaren, N. J. On 100 or 350 lb drums only, 100 to 600 lb, 63.3c; 700 to 1900 lb, 60.9c; 2000 to 9900 lb, 59.1c; 10,000 lb and over, 58.00c, f.o.b. Carteret, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100-lb drums 42.50c, f.o.b. Cleveland; 43.00c, Detroit; 42.00c, Philadelphia.

Stannous Sulphate: Less than 2000 lb in 100 lb kegs, 100.00c, in 400 lb bbl, 99.00c; more than 2000 lb, in 100 lb kegs, 99.00c, in 400 lb bbl, 98.00c, f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, 97.00c; 100 lb kegs, 98.00c, f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	15.500	15.500	14.625
Yellow brass	13.250	13.000	12.500
Commercial Bronze			
95%	14.625	14.375	13.875
90%	14.500	14.250	13.750
Red Brass			
85%	14.375	14.125	13.625
80%	14.250	14.000	13.500
Best Quality (71-80%)	14.125	13.875	13.375
Muntz Metal	12.625	12.375	11.875
Nickel, silver, 10%...	15.125	14.875	7.5625
Phos. bronze, A.....	17.375	17.125	16.125
Naval brass	13.125	12.875	12.375
Manganese bronze ...	13.125	12.875	12.250

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, f.o.b. shipping point, carload lots)

No. 1 copper 13.00, No. 2 copper 12.00, light copper 11.00, composition red brass 10.00, radiators 7.75, heavy yellow brass 7.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 13.00, No. 2 copper 12.00, light copper 11.00, refinery brass (60% copper), per dry copper content 10.50.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and Brass: Heavy copper and wire No. 1 11.25-11.50, No. 2 10.25-10.50, light copper 9.25-9.50, No. 1 composition red brass 8.50-8.75, No. 1 composition turnings 8.00-8.25, mixed brass turnings 5.25-5.50, new brass clippings 10.50-11.00; No. 1 brass rod turnings 7.50-7.75, light brass 5.25-5.75, heavy yellow brass 6.00-6.25, new brass rod ends 7.50-7.75, auto radiators, unsweated 6.25-6.50, cocks and faucets 7.75-8.00, brass pipe 8.00-8.25.

Lead: Heavy 7.00-7.50, battery plates 3.50-3.75, linotype and stereotype 10.25-10.50, electrotype 9.00-9.25, mixed babbitt 10.50-11.00, solder joints, 10.00-10.50.

Zinc: Old zinc 3.75-4.25, new die cast scrap 3.50-4.00, old die cast scrap 2.00-2.50.

Tin: No. 1 pewter 52.00-54.00, block tin pipe 70.00-72.00, No. 1 babbitt 40.00-42.00, siphon tops 44.00-46.00.

Aluminum: Clippings 2S 10.00-10.50, old sheets 6.00-6.50, crankcase 6.00-6.50, borings and turnings 3.00-3.50, pistons, free of struts, 6.00-6.50.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt.....	$23.00
No. 2 Heavy Melt.....	21.00
No. 1 Busheling.....	23.00
No. 1 Bundles.....	23.00
No. 2 Bundles.....	19.00-19.50
No. 3 Bundles.....	18.00-18.50
Heavy Turnings	17.50-18.00
Machine Shop Turnings	14.50-15.50‡
Mixed Borings, Turnings	14.50-15.50‡
Short Shovel Turnings.	18.00-18.50
Cast Iron Borings.....	18.00-18.50
Bar Crops and Plate..	25.00-25.50
Low Phos. Steel.....	25.00-25.50

Cast Iron Grades†

No. 1 Cupola Cast....	22.50-23.50
No. 1 Machinery Cast.	27.50-28.00
Charging Box Cast....	25.00-26.00
Heavy Breakable Cast.	24.00-24.50
Brake Shoe	25.00-25.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	24.00
Axles	27.00-27.50
Rails, Random Lengths	25.50-26.50*
Rails, 2 ft and under..	29.00-30.00
Rails, 18 in. and under	30.00-31.00
Railroad Specialties ...	27.00-28.00
Angles, Splice Bars....	29.00-30.00

*Brokers' buying prices.
†Offering price.
‡Crushers buying prices.

CLEVELAND

Heavy Melt. Steel.....	$18.00-19.00
No. 1 Busheling.....	18.00-19.00
No. 2 Bundles.....	16.00-17.00
Machine Shop Turnings	12.00-13.00
Mixed Borings, Turnings	17.50-18.00
Short Shovel Turnings.	17.50-18.00
Cast Iron Borings.....	17.50-18.00
Bar Crops and Plate...	19.50-20.50†
Punchings & Plate Scrap	19.50-20.50†
Cut Structurals	20.50-21.50†

Cast Iron Grades†

No. 1 Cupola.....	27.00-28.00
Charging Box Cast....	22.00-23.00
Stove Plate	21.00-22.00
Heavy Breakable Cast.	19.00-20.00
Unstripped Motor Blocks	18.00-19.00
Malleable	21.00-22.00
Brake Shoes	20.00-20.50
Clean Auto Cast.....	30.00-30.50
No. 1 Wheels.....	25.00-26.00
Burnt Cast	18.00-19.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	23.50-24.50
R.R. Malleable	22.00-23.00†
Rails, 3 ft and under.	29.00-30.00
Rails, Random Lengths	26.00-27.00
Cast Steel	28.00
Railroad Specialties ...	28.00
Uncut Tires	24.00
Angles, Splice Bars....	29.00

† Nominal.

VALLEY

Heavy Melt. Steel	$22.00†
No. 1 Bundles.....	22.00†
No. 2 Bundles.....	19.00†
Machine Shop Turnings	13.50-14.00†
Short Shovel Turnings.	18.50-19.00†
Cast Iron Borings.....	18.50-19.00†
Low Phos.	23.00-23.50†

Railroad Scrap

No. 1 R.R. Heavy Melt.	24.00-25.00

† Nominal.

MANSFIELD

Machine Shop Turnings	$13.50-14.00†
Short Shovel Turnings.	17.50-18.00†

† Nominal.

CINCINNATI

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	19.00
No. 1 Busheling	19.00
Nos. 1 & 2 Bundles ..	17.00
Machine Shop Turnings	9.00
Mixed Borings, Turnings	9.00
Short Shovel Turnings.	9.00
Cast Iron Borings	10.00

Cast Iron Grades

No. 1 Cupola Cast....	27.00
Charging Box Cast....	21.00
Heavy Breakable Cast.	18.00
Stove Plate	15.00
Unstripped Motor Blocks	15.00
Brake Shoes	15.00
Clean Auto Cast	27.00
Drop Broken Cast	30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
R.R. Malleable	18.00
Rails, Rerolling	23.00
Rails, Random Lengths	20.00
Rails, 18 in. and under	31.50

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 1 Bundles.....	$15.50-16.00
No. 2 Bundles.....	12.50-13.00
No. 2 Heavy Melt. Steel	13.00-13.50
No. 1 Busheling.....	15.50-16.00
Machine Shop Turnings	11.00-12.00
Mixed Borings, Turnings	11.00-12.00
Short Shovel Turnings.	12.00-13.00
Cast Iron Borings.....	13.00-14.00
Punchings & Plate Scrap	15.50-16.00

Cast Iron Grades

No. 1 Cupola Cast....	22.00-24.00
Heavy Breakable Cast.	17.00-19.00
Clean Auto Cast.....	22.00-24.00

BUFFALO

No. 1 Heavy Melt. Steel	$21.00-21.50
No. 2 Heavy Melt. Steel	18.50-19.00
No. 1 Bundles.....	18.50-19.00
No. 1 Bushelings.....	18.50-19.00
No. 2 Bundles.....	16.50-17.00
Machine Shop Turnings	12.50-13.00
Mixed Borings, Turnings	15.00-15.50
Cast Iron Borings.....	15.00-15.50
Short Shovelings	15.50-16.00
Low Phos.	22.00-22.50

Cast Iron Grades

No. 1 Cupola.....	25.50-26.00
Heavy Breakable	21.00-21.50
Malleable	22.00-22.50
Clean Auto Cast.....	26.00-26.50

Railroad Scrap

Rails, 3 ft. and under.	31.00-31.50
Scrap rails	25.00-25.50
Rail Specialties	28.00-28.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00-18.50
No. 1 Busheling.....	18.00-18.50
No. 1 Bundles.....	20.00
No. 2 Bundles.....	16.00-16.50
Machine Shop Turnings	11.50-12.00
Mixed Borings, Turnings	10.50-11.00
Short Shovel Turnings.	13.00-14.00
Bar Crop and Plate...	24.00
Punchings & Plate Scrap	24.00
Cut Structurals	24.00
Elec. Furnace Bundles.	20.00
Heavy Turnings.....	20.00
No. 1 Chemical Borings.	Nom.

Cast Iron Grades

No. 1 Cupola Cast....	25.00
No. 1 Machinery Cast.	28.00-29.00
Charging Box Cast....	24.00-25.00
Heavy Breakable Cast.	24.00-25.00
Unstripped Motor Blocks	19.00-20.00
Clean Auto Cast.....	28.00-29.00
No. 1 Wheels.....	28.00-29.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$13.00-14.00
No. 2 Heavy Melt. Steel	12.00-13.00
No. 1 Busheling.....	12.00-13.00
No. 1 Bundles.....	13.00-14.00
No. 2 Bundles.....	11.00-12.00
No. 3 Bundles.....	nominal
Machine Shop Turnings	5.00-7.00
Mixed Borings, Turnings	5.00-6.00
Short Shovel Turnings.	7.00-8.00
Punchings & Plate Scrap	19.00-20.00
Cut Structurals	nominal
Elec. Furnace Bundles.	19.00-20.00

Cast Iron Grades

No. 1 Cupola Cast.....	20.00-21.00
No. 1 Machinery.....	21.00-22.00
Charging Box Cast....	18.00-18.50
Heavy Breakable	18.00-18.50
Unstripped Motor Blocks	nom.
Malleable	nom.

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$14.00-15.00
No. 2 Heavy Melt. Steel	11.50-12.50
No. 1 Bundles.....	12.50-13.50
No. 1 Busheling.....	10.00-11.00
Machine Shop Turnings	5.50-6.50
Mixed Borings, Turnings	5.50-6.50
Short Shovel Turnings.	9.50-10.00
Bar Crops and Plate..	16.00-17.00
Punchings & Plate Scrap	16.00-17.00
Chemical Borings	11.00-12.00

Cast Iron Grades

No. 1 Cupola Cast.....	19.00-20.00
Mixed Cast	18.00-19.00
Heavy Breakable Cast.	17.00-18.00
Stove Plate	18.00-19.00
Unstripped Motor Blocks	16.00-17.00

CHICAGO

No. 1 Heavy Melt. Steel	$21.00-22.00
No. 2 Heavy Melt. Steel	19.00-20.00
No. 1 Bundles.....	21.00-22.00
No. 2 Bundles.....	17.00-18.00
No. 3 Bundles.....	14.00-15.00*
Machine Shop Turnings	12.00-13.00
Mixed Borings, Turnings	10.00-11.00
Short Shovel Turnings.	15.00-16.00
Cast Iron Borings.....	14.00-15.00
Bar Crops and Plate..	22.00-23.00
Punchings	22.00-23.00
Elec. Furnace Bundles.	21.50-22.50
Heavy Turnings	19.50-20.50
Cut Structurals	22.00-23.00

Cast Iron Grades*

No. 1 Cupola Cast....	27.00-28.00
Clean Auto Cast.....	27.00-28.00
No. 1 Wheels.....	27.00-28.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00-23.00
Malleable	22.00-23.00
Rails, Rerolling	27.50-28.00
Rails, Random Lengths	22.00-23.00
Rails, 2 ft. and under.	28.00-29.00
Rails, 18 in. and under	29.00-30.00
Railroad Specialties ..	24.00-25.00
Angles, Splice Bars....	24.00-25.00

* Nominal.

ST. LOUIS

No. 1 Heavy Melt. Steel	$19.00-20.00
No. 2 Heavy Melt. Steel	17.00-18.00
Machine Shop Turnings	9.00-11.00
Short Shovel Turnings.	9.00-11.00

Cast Iron Grades

No. 1 Cupola Cast....	25.00-26.00
Charging Box Cast....	20.00-22.00
Heavy Breakable Cast.	18.00-20.00
Brake Shoes	21.00-22.00
Clean Auto Cast.....	28.00-29.00
Burnt Cast	21.00-22.00

Railroad Scrap

R.R. Malleable	21.00-23.00
Rails, Rerolling	25.00-26.00
Rails, Random Lengths	21.00-22.00
Rails, 3 ft. and under.	26.00-27.00
Uncut Tires	20.00-21.00
Angles, Splice Bars...	26.00-27.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$18.00
No. 2 Heavy Melt. Steel	18.00
No. 1 Busheling	18.00
No. 2 Bundles	16.00
No. 3 Bundles	14.00
Machine Shop Turnings	14.00
Mixed Borings, Turnings	15.00
Short Shovel Turnings.	15.00
Cast Iron Borings.....	15.00
Bar Crops and Plate..	25.00-26.00
Cut Structurals	25.00-26.00

Cast Iron Grades

No. 1 Cupola Cast.....	33.00-34.00
Stove Plate	30.00-31.00
No. 1 Wheels.....	30.00-31.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00-21.00
R.R. Malleable	nominal
Rails, Rerolling	30.00-32.00
Rails, 3 ft. and under.	31.00-32.00
Angles and Splice Bars	31.00-32.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles....	16.00
Machine Shop Turnings	12.00

Cast Iron Grades

No. 1 Cupola Cast....	25.00-30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Wheels	20.00
Rails, Random Lengths	20.00

SEATTLE

No. 1 Heavy Melt. Steel	$17.00
No. 2 Heavy Melt. Steel	17.00
No. 1 Bushelings.....	17.00
Nos. 1 & 2 Bundles...	15.00
No. 3 Bundles.....	nom.
Machine Shop Turnings	12.00
Mixed Borings, Turnings	12.00
Punchings & Plate Scrap	20.00
Cut Structurals	20.00

Cast Iron Grades

No. 1 Cupola Cast.....	23.00
Heavy Breakable Cast.	19.50
Stove Plate	18.00
Unstripped Motor Blocks	18.00
Malleable	23.00
Brake Shoes	23.00
Clean Auto Cast.....	23.00
No. 1 Wheels.....	23.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Railroad Malleable	22.00
Rails, Random Lengths	22.00
Angles and Splice Bars	22.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles...	16.00
No. 3 Bundles.....	nom.
Machine Shop Turnings	12.00
Mixed Borings, Turnings	12.00
Punchings & Plate Scrap	28.00

Cast Iron Grades

No. 1 Cupola Cast....	25.00-30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Rails, Rerolling	25.00

HAMILTON, ONT.

(Ceiling prices, delivered)

Heavy Melt.	$23.00
No. 1 Bundles.....	23.00
Mechanical Bundles....	21.00
Mixed Steel Scrap.....	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	23.00
Rails, Rerolling	26.00
Bushelings	17.50
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings...	17.00

Cast Iron Grades*

No. 1 Cast.....	48.00
No. 2 Cast.....	44.00

* Removed from price control Aug. 9, 1947; quoted on basis of f.o.b. shipping point.

Sheets Strip . . .

Restrictions on export of galvanized sheets to be continued until further notice

Sheet Prices, Page 134

Washington—Plans of the Commerce Department to "open end" galvanized sheets for export have been deferred pending development of the vast grain storage bin construction program under the new Commodity Credit Corp. Chapter Amendment Act. Thus, galvanized sheets continue to be the only rolled steel product with quantity restrictions on exports. The export quota will continue at 15,000 tons per quarter until further notice.

The Department of Agriculture invited manufacturers of grain storage bins to a meeting last Friday to submit "bill of material" requirements in connection with the new storage program. Subsequently the matter probably will be referred to the Office of Industry Co-operation for discussion with representatives of the steel industry.

New York—Most sheet sellers are fairly comfortably scheduled on the major grades through July, although consumers by shopping around can place new orders for delivery before the end of that month, especially in hot sheets. Deferments and cancellations are far less numerous than they were, but are still in evidence, with a result that buyers can usually pick up tonnage for delivery within a few weeks for that reason, if for no other.

Galvanized sheets are still the scarcest item on the list, but even in this case buyers can cover on the heavier gages for shipment within three to four weeks—and should have little difficulty in covering on the lighter gages for shipment by early August.

Sheet sellers see little improvement in any channel of consumption. Meanwhile, buyers continue to rely largely on inventories and on previous commitments with the mills for their requirements. Wherever possible to hold off, the disposition is to do so with an eye to possible future developments in prices as well as to further reducing their inventories. Most consumers, in other words, are inclined to mark time where they can, pending settlement of steel wage negotiations and the possible effect this settlement may have on prices.

Boston — While some producers' July schedules are filled, there are spot openings for flat-rolled products, and a considerable volume placed for that month has been spread over the entire third quarter in equal quantities. Lack of forward buying marks order trend and more spot purchasing is placed on delivery basis. With possible return to basing point system of selling, to what extent producers will be in position to absorb freight charges is conjectural; this varies as to mill and product, but those able to reach Boston and New England area within $3 indicate they will be competitive. Most will need volume badly to absorb

How *continuously* it works is what counts

ILLUSTRATED HERE is a handling operation which is typical of the work some trucks perform throughout every shift . . . 24 hours a day! Under such circumstances every delay for servicing or repairs means lost time, lost income.

★

The logical truck for such work is an electric truck. Its motor drive stays on the job because it has few wearing parts . . . *only one basic moving part.*

★

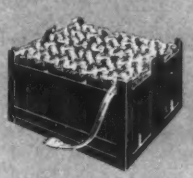
The logical battery to power the truck is an EDISON Nickel-Iron-Alkaline Storage Battery. With steel cell construction inside and out, an electrolyte that is a preservative of steel, and a foolproof electrochemical principle of action, EDISON batteries are the longest-lived, most durable and most trouble-free of all.

EDISON batteries give you many advantages: they're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle. Get a current EDISON price quotation—you will probably find initial cost MUCH LOWER than you think. Couple this factor with well-known EDISON long life and you will have the key to year-after-year economy.

EDISON

Nickel • Iron • Alkaline

STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION

of Thomas A. Edison, Incorporated, West Orange, N. J.

In Canada: International Equipment Co., Ltd., Montreal and Toronto

MicroRold®
CUTS PRICES!
Light Gauge
Stainless Steel Sheet
Cost Reduced Up To 26%

Now you pay less for those super-accurate MicroRold Stainless Steel Sheets in gauges from 27 to 36. Effective May 23, the Washington Steel Corporation made substantial reductions on all extras in sheets of those gauges. The result is a saving to steel purchasers ranging from 11 to 26 per cent.

Washington Steel is able to make these price cuts because of the efficiency and economy of its cold rolling operations on the famous Sendzimir Mill. You continue to get the remarkable uniformity of gauge, the superior surface excellence, but you pay less for it.

REMEMBER JUNE 30 THURSDAY

THE LAST DAY TO ENTER
MicroRold's $500 CONTEST

All entries in the $500 contest for new uses and applications of MicroRold stainless steel in gauges .015 and thinner must be mailed before midnight, June 30. There is no limit on the number of entries a contestant may submit, so keep the ideas coming.

Entries will be judged on the basis of economic practicability and originality by a board of three judges: Dr. V. N. Krivobok, International Nickel Co.; Richard E. Paret, American Iron & Steel Institute; and John M. Campbell, Campbell Stainless Products Co. The decision of the board will be final.

All entries must be submitted on company letterhead.

WASHINGTON STEEL CORPORATION
WASHINGTON, PENNSYLVANIA

freights at prewar levels. Price spreads in hot-rolled strip have narrowed through extra revisions, but demand has slipped sharply as deliveries improve.

Philadelphia—Sheets will perhaps be the only major item on which there will be any arrearages at the end of this quarter and even so some producers claim that they will be at balance for all practical purposes. Some producers claim that they will not be fully caught up on cold-rolled sheet business and that they may also be a bit behind on galvanized commitments. On hot-rolled sheets and electrical grades and other specialties they will be fully caught up and, in fact, have been for some little time on most of these items.

Sheet consumers are still slow in making new commitments. In general, they are buying no more than necessary, pending settlement of steel wage negotiations and ultimate clarification on the price situation. At the same time, it is possible that once these matters are cleared there may be a turn for the better which will come more swiftly than anticipated. Storekeepers at some consuming plants now claim that they are running shy on various specifications and would place tonnage at once were it not for top management orders to keep purchases at a bare minimum. Hence it is regarded that various consumers may now be leaning over backwards in their efforts to keep out of the market until they can better gage the trend in prices.

Pittsburgh—Sellers report production schedules for July are slow in filling up, with some products only 70 to 80 per cent scheduled. Silicon sheets are the hardest hit from the point of view of lack of new orders of any of the sheet or strip items. Consumers of enameling sheets report excessive inventories in relation to current production schedules. Galvanized sheets are still in fairly good demand, although considerable headway has been made against order backlogs in recent weeks. Supply of cold-rolled sheets is considered tighter than the hot-rolled sheets or strip.

Coating extras on galvanized sheets have been reduced according to formula pattern reflecting zinc price decline. Average reduction represents about $1.50 per ton.

Cleveland—Decline in demand for steel and resultant discontinuance of the use of high tensile sheets, a premium priced product, as a substitute for standard carbon sheets have made some schedules open for immediate rolling of carbon sheets.

Because of the automotive industry's continued heavy requirements of steel, the demand for sheets, particularly cold-rolled, is well sustained. Whether this will hold true after August is not yet clear.

Increased availability of steel has made consumers additionally conscious of quality. This requires mills to be more rigid in their inspections, resulting in a larger volume of rejects and wasters. However, this increased volume comes at a time when there is decreased demand for it. In an effort to move this accumulating tonnage, at least one mill has been mailing lists of material to potential

buyers.

Cincinnati—District sheet mills are filling schedules for July but thereafter the extent of demand is uncertain because of consumer hesitancy on future commitments. Already production on stainless has been cut, and some specialties are in plentiful supply. A fairly tight supply situation still exists in cold-rolled and galvanized, whereas output and needs are just about in balance on hot-rolled. Although mills are active in soliciting business, abandonment of freight absorption continues to restrict the marketing area.

Chicago—To what extent the demand for steel will be down in third quarter cannot be accurately determined yet. To date, cancellations of orders for the current period have been indicators of buying caution; failure in the near future to specify against third quarter quotas would be an ominous development.

Mills which rely primarily on carbon steel products for the large part of their output are maintaining a satisfactory rate of operations. The district rate, while gradually declining, largely conceals the fact that certain specialty mills have curtailed operations sharply.

Demand for cold-rolled and galvanized sheets continues strong from some sectors and only fair from others. For the moment, the market is coasting along.

Birmingham — The only trouble with sheets is that there are not enough of them to go around. Sheet production, as with other specifications, is not at actual capacity because there is more finishing than ingot capacity. Strip production continues on comfortable mill schedules.

St. Louis—Slump in the electrical appliance industry continues to depress demand for cold-rolled sheets. Second quarter sheet mill schedules are filled, but the third quarter doesn't look so good. Bookings of cold-rolled sheets are 30 per cent under a month ago. Production currently is down 50 per cent due to slab mill repairs. When these are completed, a hot strip mill will be shut down temporarily.

Los Angeles — Demand for sheet and strip is holding fairly well, although on a strictly hand-to-mouth basis. Some of the small fabricators who have been out of the market for several months are again specifying on a limited scale.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 134

Seattle—Rolling mill output was down last week, due to suspended operations by Northwest Steel Rolling Mills Inc. which was strike bound. Wage negotiations are still under discussion, but meanwhile production has stopped and no new business is beeing booked.

Chicago—One of the brighter spots in the whole steel market picture is for reinforcing bars. New business is seasonally at a peak and while individual projects do not require much tonnage, bulked together they loom large. Public works are, of course, most active and extend to schools, other public institutions as well as road work.

"WAITERS" ...cost more than "Tip-Money" in your plant!

MANUAL handling on production, assembly, or packaging lines is costly in manpower two ways—time waiting for material and time required to deliver it.

Whatever you make, package, or handle — in large or small quantities — loose or in containers — see Standard for a complete engineered gravity or power conveyor system—a portable conveyor unit — a portable, lightweight conveyor section.

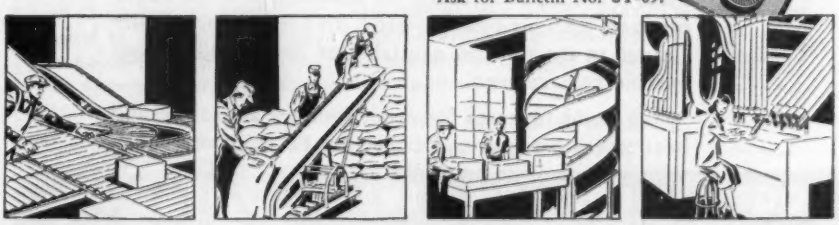
The range and versatility of Standard Conveyor equipment has been developed in more than 40 years of service to business and industry.

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities

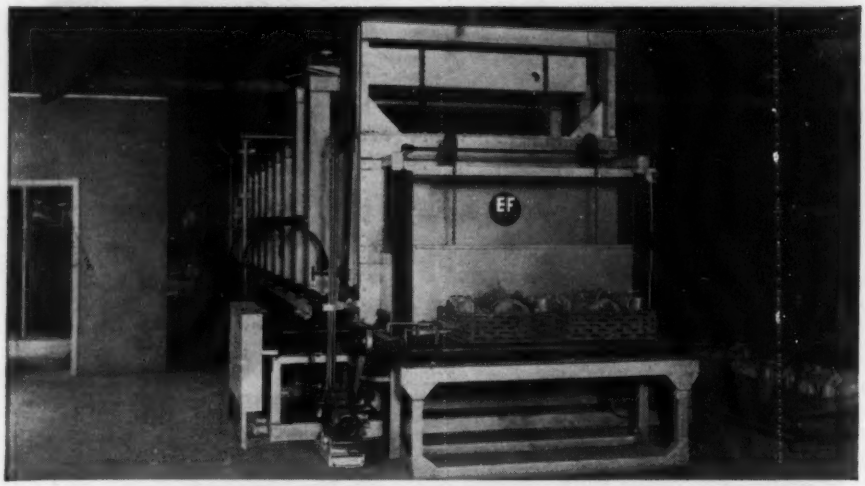
Standard GRAVITY & POWER CONVEYORS

Send for Standard's General Catalog—see how conveyors are used to best advantage in every field of industry. Ask for Bulletin No. ST-69.

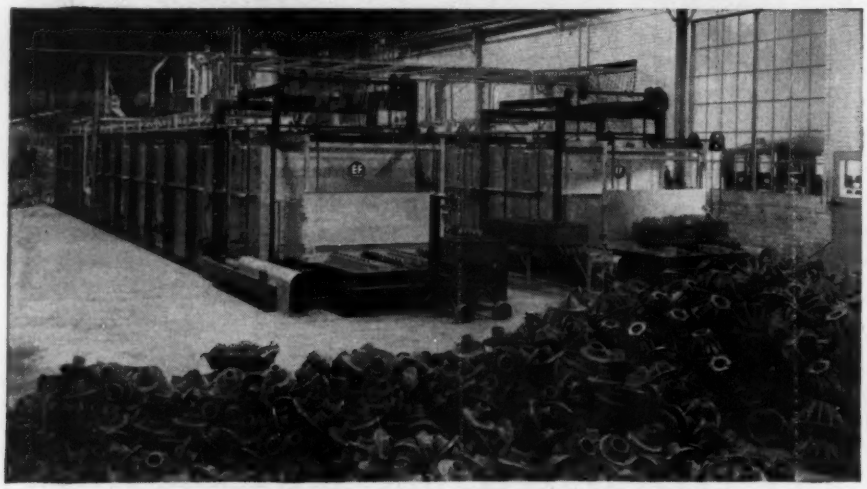


ROLLER - BELT - SLAT - CHAIN CONVEYORS • PORTABLE CONVEYORS AND PILERS • SPIRAL CHUTES • PNEUMATIC TUBE SYSTEMS

EF MALLEABLE FURNACES



SHORTEN THE CYCLE



FROM DAYS TO HOURS

● EF special atmosphere short cycle malleablizing furnaces produce a better, more uniform and scale-free anneal—in shorter time—at lower cost. They reduce the amount of material tied up in process—speed deliveries. Packing in pots is entirely eliminated, reducing the fuel requirement—the labor cost—and improving working conditions in the plant. Continuous types like those pictured above, or batch type furnaces, fitted with gantry cranes or other material handling equipment if needed to facilitate the handling of large, heavy castings. Radiant tube gas-fired, oil-fired or electrically heated, to use the fuel available or best suited to your specific requirement.

We build furnaces for every foundry annealing and heat treating requirement. Let the EF engineers work with you on your next job.

EF

THE ELECTRIC FURNACE CO.

GAS FIRED, OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION

Salem - Ohio

Plates . . .

Two eastern producers lower prices $1 a ton and more changes pend

Plate Prices, Page 135

New York—Increasing competition in plates has resulted in a further realignment of prices. Bethlehem Steel Co. has reduced carbon plates $1 a ton to 3.40c, Sparrows Point, Md., Johnstown, Pa., and Lackawanna, N. Y.; hot-rolled low-alloy high-tensile plate, $2 a ton to 5.20c, Sparrows Point and Johnstown, effective as of June 6. Also effective on that date, the Alan Wood Steel Co., Conshohocken, Pa., reduced plates $1 a ton, to 3.50c mill. These revisions follow a $1 reduction by Worth Steel Co., Claymont, Del., June 1. As reported in the June 6 issue of STEEL, the Claymont price was revised to 3.50c. These changes may result in further revisions in the eastern plate market shortly.

The latest change by Bethlehem restores Sparrows Point, by a narrow margin, as the governing base on plates for delivery to New York city. In other words, with a 3.40c base at Sparrows Point (a price now equivalent to the Pittsburgh base) and with a freight of 0.4028 cent excluding 3 per cent federal tax, the minimum delivered price here is now 3.8028c. This compares with the next lowest delivered price of 3.8074c on plain plates from Conshohocken, Pa., predicated on 3.50c mill and a 0.3074 cent freight. Following closely is a 3.8180c delivered price, predicated on a 3.50c Claymont base and a 0.3180 cent freight. The New York delivered price on plates from Coatesville, Pa., is 3.8286c, based on 3.50c mill and 0.3286 cent freight.

The delivered price from Johnstown to this city is 3.9194c (3.40c mill plus 0.5194 cent freight); from Lackawanna, 3.9618c (3.40c mill plus 0.5618 cent freight); and from Pittsburgh, 3.9936c (3.40c mill plus 0.5936 cent freight).

The trend in plate buying continues to taper. Some sellers report an occasional spurt, but say that it doesn't last. Most plate mills can promise shipments within three weeks.

Philadelphia—Recent further adjustments in eastern prices on plain carbon plates include a $1 a ton reduction by Alan Wood Steel Co., Conshohocken, Pa., and the Bethlehem Steel Co., with plate mills at Sparrows Point, Md., Johnstown, Pa., and Lackawanna, N. Y. The mill price of the former producer is now 3.50c and of the latter 3.40c. As the Conshohocken mill price is now on a parity with that of the Claymont, Del., producer and the freight rates from these two points into Philadelphia are the same the minimum delivered price here remains unchanged at 3.5848c.

Philadelphia—Central Iron & Steel Co., Harrisburg, Pa., had reduced prices of plain carbon plates $9 a ton to 3.50c mill, effective June 9. This revision brings the company's price in line with three other eastern district plate producers.

The Coatesville, Pa., plate producer has reduced the price on steel enter-

ing into flange work at its plant $1 a ton, to 3.40c per pound mill.

Chicago — Lack of new orders rather than lack of plates has pushed its way into the No. 1 headache spot for most fabricators. After this month, district men expect the steel shortage to be largely a thing of the past and even in the current period it is believed some tonnage could be ordered for relatively nearby delivery. Operations with most fabricators are held to a high level by old orders, which, however, are being completed rapidly. Trade feeling is definitely pessimistic because of the dearth of new inquiries. Dominating the hopes of all local interests is a $6 million natural gas liquefication and storage plant contemplated by Chicago District Pipeline Co., subsidiary of Peoples Gas Light & Coke Co., not many details of which are yet known to the trade.

Birmingham—Plates are being absorbed as fast as they can be produced. From reliable sources it is learned that tonnages made available by slackening here and there are quickly taken up. Output is on the basis of full ingot allocations when other specifications are taken into consideration.

Dallas—Plate supplies have about caught up with demand in all categories in this section. Easing of the demand for pipe has contributed to this better balanced inventory situation. Even galvanized sheets, the last item in which there has been any stringency, are now reported available to meet current needs.

Los Angeles—Carbon plate prices have been reduced by Kaiser Co. Inc. to $4 per 100 lb, f.o.b. Fontana, from the previous price of $4.35. Freight allowances which the company had been making in western marketing areas, are being continued. The price reduction makes Fontana plate competitive with that of Geneva Steel Co., and brings it below the West Coast delivered price of Bethlehem plate.

Seattle—Backlogs of contracts involving plates are not heavy and plants will have to curtail operations within sixty days unless new business is booked. Materials are in much improved supply.

Steel Bars . . .

Bar Prices, Page 134

Philadelphia—For the first time since before the war, hot carbon bar producers generally are winding up a quarter without arrearages. As a matter of fact, some mills can still accept tonnage for shipment before the end of the period. They have a fair rolling schedule set up for July, and a smattering of orders for shipment beyond, although all indications point to lighter shipments in the third quarter than in the three-month period now expiring.

Cold-drawn bar mills have been experiencing a steadily declining volume of new business for some time, but have been bolstering operations somewhat by building up their own inventories. However, as stocks are getting in fairly good shape and there is little prospect of an early improvement in demand, operations from now

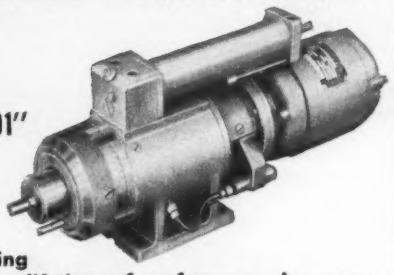
CRT

..."All ingenious things are simple"

THE NEW AIR-HYDRAULIC

"CLEVELAND REPUBLIC" DRILL UNIT

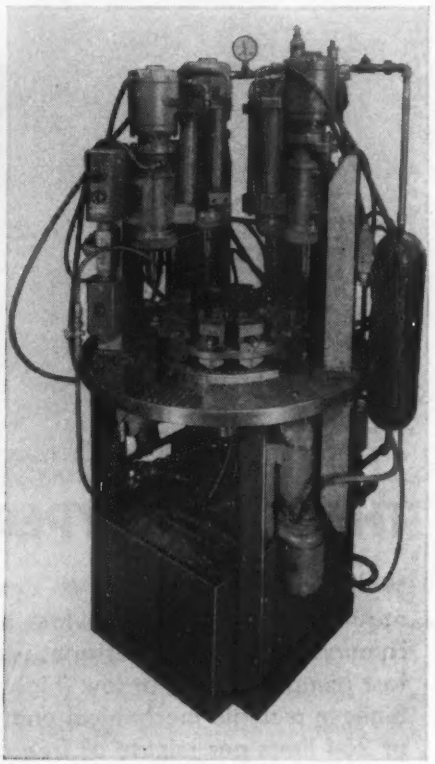
1. Compact...Only 4 Moving Parts
2. Sealed Motor and Head
3. Micrometer Controlled Depth to .001"
4. Holds Spindle Runout to .0005"
5. Built-in Automatic Cycling Switch



The ingenious simplicity of engineering design in the CRT Power Unit brings a lifetime of performance in many production operations. Use its' controlled power for drilling, chamfering, spin-riveting, spot facing, sawing and end milling.

CAN WE REDUCE YOUR COSTS?

The Union Chain & Mfg. Co. of Sandusky, Ohio gained three free operations by using five CRT Model 250 Drill Units. Formerly four single spindle presses were used to drill cross pin holes. Now this one machine does the entire job, drilling in SAE 2320 steel, the pin diameter varying from .234 to .562 and the drill size from .086 to .191, cycle time 2½ sec., the rate being between 600-1500 pieces per hour.



Special drilling machine for Union Chain and Mfg. Co.

"CLEVELAND REPUBLIC" SPECIAL MACHINERY

The building of special machinery has been an outstanding performance of Cleveland Republic Tool Corporation, who design special machinery or build to your specifications. Write for further information, there is no obligation to get the recommendations of our engineers on special machinery design and application.

A FEW TERRITORIES AVAILABLE FOR REPRESENTATIVES

CRT

CLEVELAND REPUBLIC TOOL CORPORATION

General Sales Office, Main Plant and Foundry Division

9615 Meech Avenue, Cleveland 5, Ohio • Detroit Office, 6505 Second Blvd.

on should decline more rapidly for a while; in fact, most cold drawers look for a dull summer.

Meanwhile, jobber prices on cold-drawn bars are becoming increasingly unsettled, although so far mill prices have held steady, barring a slight readjustment by the Camden, N. J., mill, from 4.50c to 4.48c, mill.

Pittsburgh—Cold-finished bar producers are able to make prompt deliveries for nearly all size ranges, in contrast to a nearly six months' lead time required earlier this year. Supply of hot-rolled carbon and alloy bars is more than adequate to sustain current cold finishing schedules. Some interests have accumulated a sizable inventory of hot-rolled stock and to much lesser extent of cold-finished. Sellers report considerable pressure on part of customers to reduce prices. However, present high unit costs are increasing because of reduced operations, and the uncertain outlook in respect to pending wage negotiations has prevented such action to date. Hot-rolled alloy bar demand shows no indications of emerging from low levels of recent weeks. Unconfirmed reports are to effect some mills are now accepting small lot tonnages under 1999 pounds. Unbalanced inventories and uncertain price trend are major reasons for dearth of new orders.

New York—Hot carbon bars are now easily available in virtually all sizes and descriptions for shipment within three to four weeks. Much depends upon operating cycles as to what specifications can be obtained from a single mill for early shipment, but as cycles vary among different mills, a consumer has little difficulty in obtaining what he wants by shopping around a bit, if necessary. The situation in cold-drawn carbon bars is relatively even easier, with lack of new buying enabling cold drawers to build up diversified stocks. Alloy bars, both hot and cold, can be had on short notice.

Los Angeles—Demand for steel bars continues to recede slowly. Mills generally are attempting to fill specific local requirements more fully than has been possible for several years. Rolling schedules formulated under former tremendous pressure for deliveries did not always permit bar producers to be a local source for local consumers. Now one mill is turning out special quality and special purpose bars, including one grade which a cold-drawn automotive parts maker had previously obtained from eastern sources.

San Francisco—Supplies of bars appear to be plentiful and buying is small. Inventories in most hands, jobbers' and consumers', are heavy.

Wire . . .

Pittsburgh — Wire producers are seriously considering reducing galvanized extras on nails 35 cents per 100 pounds to $2.45 per 100 pounds in line with similar action initiated by American Steel & Wire Co. No improvement in orders for manufacturing wire items has developed, while jobbers' stocks of merchant products are at the best level in the postwar period. Inventory adjustments continue to retard new order volume throughout the entire range of wire products.

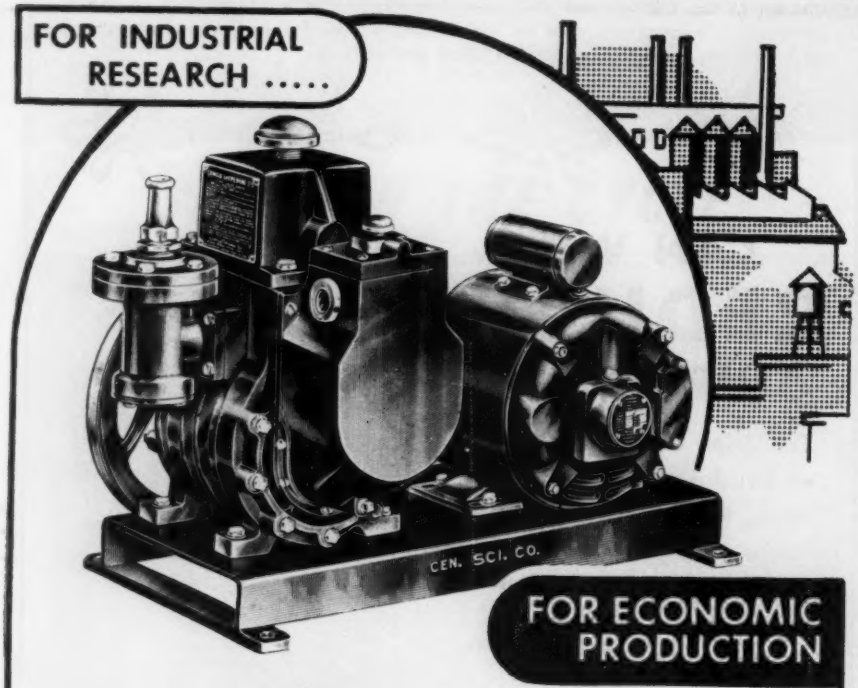
Bethlehem Steel Co. has reduced galvanizing extras on nails 35 cents to $2.45 per 100 pounds, effective as of June 8.

In addition to Bethlehem, Pittsburgh Steel and Portsmouth have followed U. S. Steel Corp. subsidiaries' action in reducing galvanizing extras on nails 35 cents per hundred pounds. Similar price policy expected to be adopted by Jones & Laughlin by week end.

Cleveland—Reduction of 35 cents per hundred pounds in the extra for hot galvanizing wire nails was made last Tuesday by American Steel & Wire Co., this city. This change, which reflects several recent reductions in the price of zinc, makes the new extra $2.45 per hundred pounds in carloads and $2.70 per hundred pounds in less than carloads.

With demand continuing to decline, standard items in manufacturers' wire can be delivered two weeks after placement of order. Producers see no likelihood of upturn in demand before fall. One item holding up fairly well, however, is core wire for use in telephone wire construction.

Birmingham—Wire products generally are somewhat easier, but there is no surplus, even of nails which are in better supply than they have been for months. Barbed wire is slow, but demand for woven fencing is steady and increasing moderately.



THE CENCO-HYPERVAC 25 PUMP

High temperature melting or sintering of metals and alloys requires dependable and fast high vacuum. The Cenco-Hypervac 25 Pump performs dependably with extremely fast pumping speed at low (high vacuum) pressure. It combines in a single mechanical unit ability to pump at a speed of 264 liters per minute of free air or 120 liters per minute at 1 micron and attains an ultimate pressure well below 0.1 micron. Here is a pump that will back up diffusion pumps without an intermediate booster.

Write Dept. B. R. for prices and descriptive engineering Bulletin No. 10 A.

CENTRAL SCIENTIFIC COMPANY
Scientific CENCO Apparatus
1700 IRVING PARK ROAD, CHICAGO 13
NEW YORK BOSTON SAN FRANCISCO NEWARK LOS ANGELES TORONTO MONTREAL

Structural Shapes . . .

Construction bids now being received generally are well below estimates

Structural Shape Prices, Page 135

Chicago—While fabricators' difficulties in steel procurement have not entirely disappeared, they have eased substantially. The better flow of material, in conjunction with other factors, is resulting in lower bid figures in many instances. Two governmental groups last week took cognizance of the lower price trend. Municipal authorities said that on recent bid openings half the general contractors quoted prices as much as 25 per cent under the estimates. U. S. government engineers also said that on recent jobs all bids have been at or under estimates.

Prominent district fabricators last week were operating at capacity, although most are relying on their heavy order backlogs to keep up this pace. One company's order backlog is full throughout the rest of the year, but new work scheduled for next year is conspicuously absent. One fabricator's May operations were above the plant's rated capacity, being supported by old business. Prospects of better steel supply are evident in buying habits of most fabricators, the common practice now being to trim inventories in all products to 30 days' supply. One company which previously had accumulated about a 60 days' supply is reducing reserves and a similar assimilation process by other companies is probably the cause of a major part of the buying hesitancy noticed by virtually all mills. A few mill spokesmen now predict that progressive decline in construction work over the remainder of the year will nullify the new steel orders which should be expected as inventories are brought down to the lower level. In other words, a 30-day inventory might turn into a 45-day stock and buying would again be adjusted accordingly.

Boston—Inquiry is slightly heavier, notably school buildings taking under 300 tons each. Fabricated steel for these is generally placed on delivery basis at sharply competitive prices among district shops. Steel arch bridge, three girder spans, Gloucester, Mass., takes 2400 tons, bids direct on the superstructure, June 21. Structural mills are building up stocks for the first time in years and shipments on some sizes are prompt. Freight absorption of $4 to $5 confronts Pittsburgh district mills in event of return to basing point selling.

New York — While structural inquiry is still relatively light, compared with early in the year, most of such work now bid upon appears to be going ahead. Until recently most projects up for figures lagged considerably after estimates were submitted, with some being withdrawn indefinitely. Meanwhile, competition among fabricators is becoming increasingly keen, structural prices being somewhat lower on an average.

Philadelphia — Public work still constitutes the great bulk of current structural activity, with overall volume continuing to decline. With less

.It's *yardage* that counts! And my MICHIGAN has convinced me that you don't always need a big dipper to get big yardage. No matter what I put her on—sand, gravel, clay, rock—that baby *really* goes to town! Gets out more yardage per hour than any shovel that size I've ever owned. She crowds and swings fast, and dumps fast and clean. When anyone says truck shovels to *me*, I say, 'my *next* one's a MICHIGAN, too!' For the best 'buy' in a truck shovel, get a MICHIGAN!"

Write for Bulletin 100—
"On the Job With MICHIGAN"

DID YOU KNOW you can buy a brand new **MICHIGAN TRUCK CRANE** complete with chassis for as little as $10,250 F.O.B. factory?

MICHIGAN

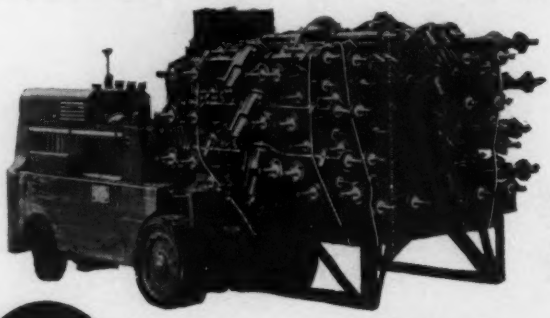
MICHIGAN POWER SHOVEL COMPANY
392 SECOND STREET, BENTON HARBOR, MICHIGAN, U.S.A.

"The New Twist"
for your strapping operations
...GERRARD!

● Gerrard Round Steel Strapping is adaptable to almost every type of tying operation. Between the 18 gauge strapping for protecting parcel post packages and the 8 gauge strap for securing carload lots of steel pipe or machinery, there's a size of Gerrard Strapping that will do your job perfectly.

Because it's *round*, Gerrard Steel Strapping grips where it touches. It is ideal for pallets and has been used successfully to palletize such odd shaped objects as auto springs and rear axles. *And Gerrard Round Steel Strapping costs about 40% less than any other type of metal reinforcement.*

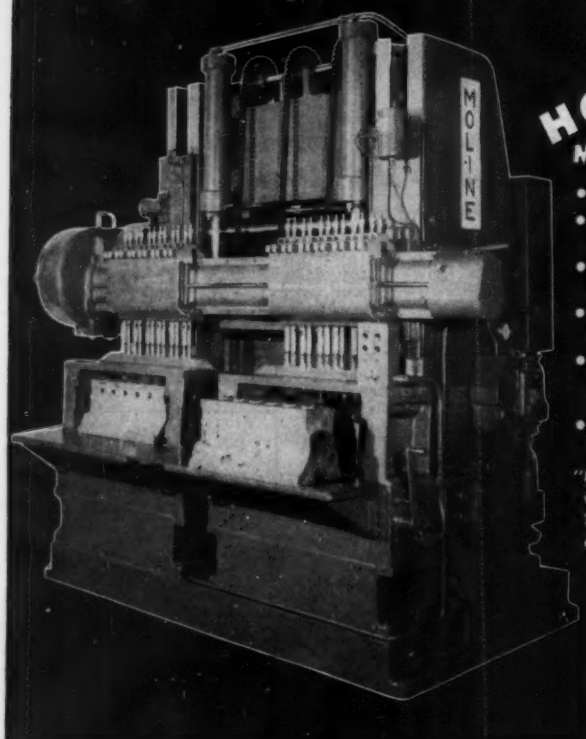
Gerrard engineers will gladly consult with you about your strapping problems free of charge. Send for the *Blue Book of Packaging*. It is free. GERRARD STEEL STRAPPING COMPANY, 4745 So. Richmond Street, Chicago, Ill.



Gerrard Round Strapping grips where it touches, conforms to the odd shape of the auto axles on the pallet.

USS
GERRARD
ROUND STEEL STRAPPING
UNITED STATES STEEL

PRODUCTION UP...
COSTS DOWN
with...
HOLE-HOG
MACHINE TOOLS



- Multi-Spindle Boring
- Single and Multi-Spindle Honing
- Straight Line Multi-Drilling
- Adjustable Spindle Drilling
- Vertical and Way-Type Fixed Center Drilling, Boring and Tapping
- Special Multiple Operation Machine Tools

"Hole-Hog" does it better with 50 years of Machine Tool Engineering experience at your service.

MOLINE TOOL CO.
"HOLE-HOG"
MOLINE, ILLINOIS

tonnage coming in than they are turning out, fabricators continue to eat into backlogs. Meanwhile, shape mills report a further decline in business, although so far operations have not reflected the full effects, as producers are building up inventories to some extent.

While the bridge shop continues to operate, the shape mill at Phoenixville, Pa., appears to be down for an indefinite period, with no indications as to when, if ever, it may again resume production. Meanwhile it is endeavoring to dispose of about 6000 tons of shapes and is said to be quoting around 3.30c per pound, mill, on lots running as small as five and ten tons. It is also said to be planning to liquidate other stocks, including 10,000 tons of pig iron and 100 tons of ferromanganese. The bridge shop is engaged in fabricating several structural jobs booked over the past few months. The mill has an annual rated capacity of 231,400 net tons of ingots and 259,000 net tons of shapes.

Birmingham — Shape output and demand, while not quite up to heretofore normal schedules, are fairly well sustained. Structural shops for the most part are well occupied.

Dallas—All structurals are now in good supply and Texas fabricators are able to cover practically all short term needs. Construction is slowing down, due primarily to holding off of numerous jobs that were contemplated. Apparently uncertainty as to the duration of the recession has been added to the waiting for lower building costs as a deterrent factor in building. There have been few, if any, major cancellations of orders, but some large Gulf Coast Chemical industry projects are being held up; in one instance, some materials already laid on the ground are not being utilized. Mill prices are still steady. A substantial tonnage of surplus material, bought during the scarcity, is now being unloaded in this market.

San Francisco—Demand for structurals is spotty. Heavy construction, except for public works, continues depressed. Excess inventories of several structural items are reported.

Seattle—Local fabricating shops have sizable order backlogs which will carry them into the fourth quarter. Volume of small jobs is good.

Rails, Cars . . .

Track Material Prices, Page 135

New York—Domestic freight car deliveries during May totaled 9525, the American Railway Car Institute, this city, announced last week. April production was 10,787 cars.

Of May deliveries, 6879 were from the car builders and 2646 were built in railroad shops. Production on the leading types of cars was: Box 921, hopper 4477, gondola 2319, refrigerator 679, tank 493.

Orders during May totaled 589, all these being placed with the car builders.

The backlog of orders as of June 1, the Institute reported, was: Car builders, 27,931, railroad shops, 24,350; total 52,281. This compares with 62,369 on May 1 and 127,689 a year ago.

"Umpteen" Sizes of
MACHINED CASTINGS
your problem?

Continental
CASTING AND MACHINING FACILITIES
handle a range from
50 lbs. to 250,000 lbs.

CONTINENTAL regularly produces all sizes of intricate and unusually designed castings in any analysis of cast steel and in sizes from 50 lbs. to 250,000 lbs. Three large capacity foundries keyed to either custom or production operation and two heavy-duty machine shops offer you promptly scheduled delivery on a wide size range of castings to your specification. Send your drawings for quotation.

Continental
FOUNDRY & MACHINE CO.
Chicago · Pittsburgh
Plants at:
East Chicago, Ind.; Wheeling, W. Va.; Pittsburgh, Pa.

Tubular Goods . . .

Tubular Goods Prices, Page 135

New York—Merchant pipe producers are in position to allocate comparatively little more tonnage than they were a few weeks ago; however, distributors and consumers are much more satisfied with what they are getting, as requirements are off rather appreciably. In fact, some distributors are deferring shipments—but shipments which to date have been readily absorbed in other quarters. Most mills are still supplying jobbers on a month-to-month allotment basis.

Washington—Approval of licenses to the Trans-Arabian Pipe Line Co., for export of 47,500 tons of 30-31 inch welded line pipe during the second and third quarters of 1949 was announced last week by the Office of International Trade, Department of Commerce. This quantity is in addition to an earlier approval of 35,000 tons for the second quarter. The entire Trans-Arabian pipe line, which is to run 1067 miles across the Arabian peninsula, is expected to require a total of 260,000 tons of line pipe, of which 161,500 tons has been licensed.

Pittsburgh—National Tube Co., has reduced galvanized pipe $2 a ton, retroactive to May 24. At the same time the company has discontinued the practice of automatically adjusting its galvanized pipe prices in step with changes in zinc. Hereafter, it will make adjustments periodically.

Dallas—Oil country goods remain in fairly good demand but activity has fallen off sharply in comparison with the condition several months ago when pipe was the shortest item in this section. The market is increasingly competitive and oil companies are buying only for immediate needs due to curtailment of exploration programs.

Tin Plate . . .

Tin Plate Prices, Page 135

Pittsburgh—Substantial liberalization of the use of tin for border line applications is expected to develop out of recent revisions in tin orders M-43 and M-81. Some producers also anticipate these revisions will further stimulate demand for electrolytic tin plate. However, lifting of many of the restrictions under these orders is not expected to significantly stimulate overall new demand.

Tin plate producers' hopes of the abandonment of all tin coating regulations for end-use applications after June 30 have been set back by action of Secretary Sawyer last week in asking Congress to extend controls on tin products for another year.

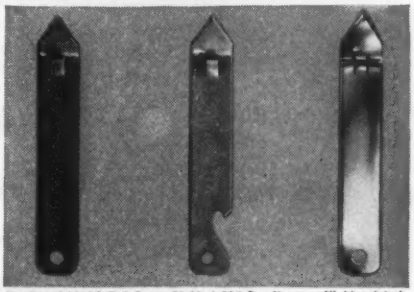
Anticipated seasonal increase in tin plate demand for perishable food packs has not yet developed, resulting in steadily growing inventories among producers. This condition cannot continue much longer without forcing gradual reduction in operating schedules. There are still large inventories of last year's food packs on dealers' shelves, and there is no indication that these inventories will be reduced at a faster rate in the immediate future.

Producers report there are openings in July rolling schedules, a

Remove
RUST AND HEAT SCALE FROM HEAT-TREATED METAL SURFACES
Safely DIVERSEY* EVERITE

Does Not Attack Base Metal . . . Does Not Change Dimensions on Forgings and Castings . . . Reduces Danger of Hydrogen Embrittlement!

Pickled in raw muriatic acid, these beer can openers, pressed from SAE 1050 steel were subject to hydrogen embrittlement which resulted in an exceptional number of tabs breaking off when the openers were used. The use of Diversey Everite completely solved this problem!

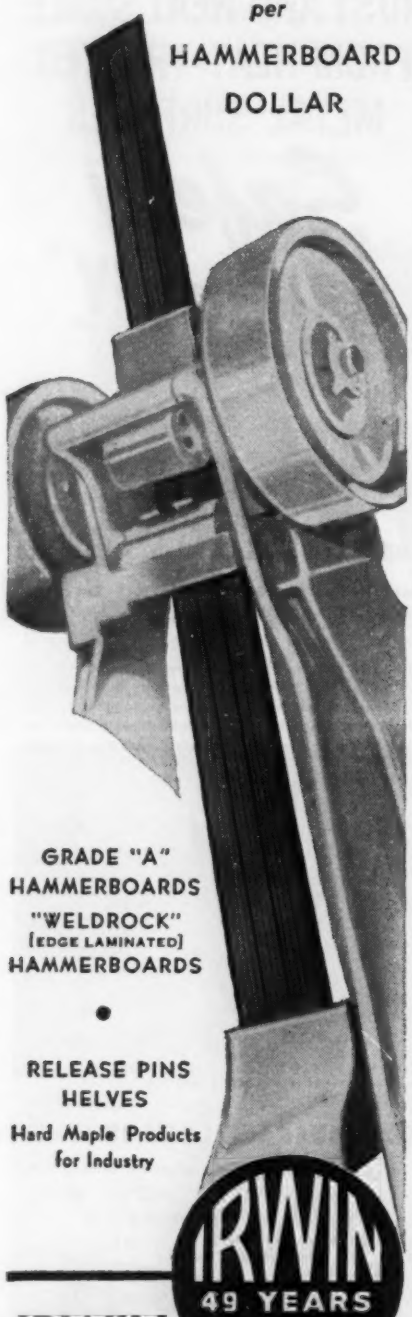


Hardened 1650° F., 5-7 min. oil quenched, drawn 675° F., 45 min. | Pickled 50% Everite for 2½ minutes. | Nickle plated.

THE DIVERSEY CORPORATION
Metal Industries Department
53 W. JACKSON BLVD., CHICAGO 4, ILL.
*TRADE MARK REG.

Investigate Diversey Everite now! See the difference in your own cleaning tank! Mail this coupon for complete information!

THE DIVERSEY CORPORATION
Metal Industries Department
53 W. Jackson Blvd., Chicago 4, Ill.
Gentlemen:
Please send me complete information on Diversey Everite.
Name_____ Title_____
Company_____
Address_____
City_____ State_____
DM7

IRWIN
HAMMERBOARDS
MORE FORGINGS
per
HAMMERBOARD
DOLLAR

GRADE "A"
HAMMERBOARDS
"WELDROCK"
[EDGE LAMINATED]
HAMMERBOARDS
•
RELEASE PINS
HELVES
Hard Maple Products
for Industry
IRWIN
49 YEARS
of Quality
IRWIN
MANUFACTURING CO., INC.
GARLAND, PA.
Distributed by
JOHN H. SIPCHEN CO.
549 Washington Blvd.
Chicago, Illinois
BRETT'S PATENT LIFTER CO., Ltd.
Foleshill Works • Coventry, England

further reflection of easing in demand from miscellaneous accounts.

Tin plate production at the Yorkville Works of Wheeling Steel Corp. will be adversely affected by the reduction in tandem mill operations to 30 turns per week at that plant, against 35 turns previously.

San Francisco—Large inventories of canned fruits being carried over by West Coast packers into the new crop season indicate canning volume will be considerably less this year than last. As a result, demand for tin plate will be considerably reduced, although the extent of the cut can't be tallied specifically until the actual canning season begins.

Pig Iron . . .

Pig Iron Prices, Page 136

Pittsburgh—Ingot mold producers and jobbing foundries serving the steel industry have been the main support of the merchant iron trade in recent weeks. Plumbing and heating foundries have been either shut down or working on substantially reduced schedules since early March and there is little to indicate that the inventory problem in this connection will be alleviated for some time. Foundries serving the railroad industry also have been operating at sharply reduced levels, although some are still maintaining a work week of five days on curtailed basis.

Carnegie-Illinois Steel Corp. blew out its No. 6 blast furnace at Duquesne Works, reflecting primarily the drying up of demand for merchant iron. Installation of a new 10-ton hot metal charging crane has forced temporary shut-down of melting operations at Pittsburgh Steel Co., including banking of company's No. 3 blast furnace at Monessen, Pa. There are 40 out of 47 blast furnaces pouring iron in this district.

New York—Pig iron demand remains listless, with shipments still tapering. Sellers generally expect the movement this month to be down from May and, in fact, see little likelihood of an upturn before late summer. Meanwhile, eastern merchant producers are accumulating tonnage, with probability that additional capacity will be taken out of operation shortly. Foundries in this district are averaging around three days a week.

Philadelphia—Lull in pig iron buying continues and were it not for the possibility of major labor disturbances this summer in coal and maybe in steel, there probably would be more pig iron capacity being taken off at this time. As a matter of fact, reports persist that one eastern merchant furnace is scheduled to be banked next week.

At the same time despite the threats of a prolonged coal strike, most producers of oven coke are in fairly comfortable shape, with large fuel supplies on hand. It is estimated that a suspension at the mines would have to continue for several weeks before affecting coke production in any important measure.

The Phoenixville, Pa., shape mill, which was closed down indefinitely, is planning to liquidate raw material stocks, including 10,000 tons of pig iron.

Cleveland—Extent of weakness in demand for pig iron is reflected in the banking of one of Republic Steel Corp.'s five blast furnaces here. Two weeks earlier one of the stacks was blown out because of a drop in demand for merchant iron. Pig iron sellers report an occasional foundry's orders for iron show signs of a pickup, but these instances are not in sufficient number to promise any substantial revival overall. Prices remain unchanged.

Buffalo—Further gloom was apparent among foundry operators as a pronounced shrinkage took place in production of castings for railroads. As a result, additional iron is being stored or piled, while the movement of iron out of the area to Michigan motor casters continues heavy. Indications point to a nearby curtailment in pig iron output.

Interest centers in receipt of almost 40,000 tons of high grade Swedish ore at Bethlehem Steel Co.'s Lackawanna plant. It arrived since the start of the navigation season. An additional 20,000 tons is enroute to Montreal and will be transshipped to small Canadian freighters for consignment to Bethlehem.

Cincinnati—Demand for pig iron, both northern and southern, continues light with no signs visible now of any upward trend. The melt for heating and sanitary equipment is disappointing, with any pickup probably delayed until the inventory situation is improved. Jobbing and machine tool foundries are on drastically curtailed schedules.

Chicago—Demand for iron is expected to drop to its lowest ebb during the approaching vacation periods. Sellers have been advised by several of their best customers that they will not want iron laid down during the vacation weeks. The bearishness of many casters is prompting them to practically exhaust their inventories before reordering. May shipments of many iron suppliers were down substantially from those in April; June looks to most to be an even worse month. Assuming present foundry schedules will be maintained, a pickup in ordering after the summer months is expected because of the lack of iron stocks at most shops.

Birmingham—Pig iron production, while lacking the output of one Republic Steel Corp. furnace, is adequate to take care of immediate needs. Merchant iron interests declare the improvement they predicted a few weeks ago already is in evidence. They expect further pickup as inventories are worked off and scrap assumes a more normal aspect.

St. Louis—Demand for pig iron continues to drift lower. Based on the month's first week of bookings, sales in June may be 5 or 10 per cent under May. This district's principal producer has banked one of its two furnaces and laid off 10 per cent of its men. It anticipates returning to capacity operations, however, in two months. Demand is softest in stoves, jobbing and steel foundries; consumption in the auto and farm equipment industries is holding up well. Radiator manufacturers, whose business slumped sharply recently, expect their iron needs to rise substantially and more than seasonally by the end of the year.

Scrap . . .

Scrap Prices, Page 140

Pittsburgh—Only significant dealer scrap purchase last week was for short shoveling turnings at $18. Railroad heavy melting also was awarded to a consumer here at $24. General price levels for railroad items are off $1 to $3, reflecting completion of old order commitments at higher price levels among brokers and dealers who sought better quality scrap to keep rejections to a minimum. There is some distress industrial scrap offered at lower prices, but no significant tonnage purchase below $23 for No. 1 heavy melting reported. Movement of scrap out of Detroit to Canada and from the southwest to Mexico has been stepped up recently. High freight rates and current relatively low prices at major consuming points have discouraged collection of scrap by peddlers, a condition considered unhealthy. New buying represents merely token tonnage orders in an effort to prevent too drastic reductions in scrap quotations in the future. Recent small lot sales of cast scrap items indicate the market is $1 lower, although prices still are considered largely nominal.

Philadelphia — Further reductions have been made in scrap prices. No. 1 heavy melting steel is now down to $20, delivered; No. 2 heavy melting and No. 1 busheling, $18-$18.50; No. 1 bundles, $20; and No. 2 bundles, $16-$16.50. Machine shop turnings are easier at $11.50-$12; short shovel turnings, $13-$14. Electric furnace bundles and heavy turnings are off to $20.

Major price developments in the cast grades comprise a reduction in charging box and heavy breakable cast to $24-$25; in unstripped motor blocks to $19-$20.

Demand continues sluggish in all grades, with consumers and sellers alike manifesting little interest. This lack of interest extends to railroad lists, with the carriers commenting on the relatively small number of bidders for their material of late. Pennsylvania-Reading Seashore lines are opening bids June 20 on 1408 net tons of 100-lb relaying rail and approximately 76 tons of splices.

The leading eastern steel scrap consumer is unloading three cargoes of foreign scrap at Baltimore. Arrivals of foreign scrap are expected to drop sharply after the end of this quarter. According to some trade estimates, shipments from overseas in the third quarter will amount to about 25 per cent of second quarter volume.

New York—Brokers' buying prices on No. 1 heavy melting steel and No. 1 bundles have dropped to $13-$14, delivered. No. 2 heavy melting steel and No. 1 busheling prices, however, remain unchanged, at $12-$13. This is the first time since the present decline in scrap prices began early in the year that prices on No. 1 grade have touched the spread on the No. 2 grade and No. 1 busheling. Prices on turnings, low phos and cast grades are nominally unchanged, with trading generally at a virtual standstill and no early improvement in prospect.

Cleveland—Reduced operations at blast furnaces and open hearths add further weakness to the scrap market.

ARDCOR*
presents
The Latest Improvements
in
ROLL FORMING MACHINES
* Formerly McKinney—With ARDCOR Improvements
ARDCOR Roll Forming Machines combine the precision, accuracy and stability found only in the highest grade machine tools. High strength alloy metals which cannot be pressed can be ROLLED the ARDCOR Method. Five types of machines are available to meet your requirements. Write for NEW Catalog!
USE ARDCOR ROLLER DIES!
Continuous precision and quality of cold rolled products depends upon your roller dies! With correctly designed ARDCOR Roller Dies (For All Roll Forming Machines), made of highest grade tool steel, maximum production speeds are assured . . . better products obtained.
Send Work Specifications For Estimates . . . No Obligation.
AMERICAN ROLLER DIE CORPORATION
20700 St. Clair Ave. • Cleveland 17, Ohio

EFFICIENT PARTS HANDLING THROUGH---
Stanwood BASKETS
Correct Design!
From hairpins to harrows—no matter how small or how large—your problem of handling parts through heat-treating, quenching, pickling, washing, degreasing or bright dipping will be solved through Stanwood's correct design. Stanwood engineers, capable, always ready to serve, will correctly design a basket most suitable for your parts, assuring maximum production.
Stanwood manufactures all types and sizes of trays, fixtures, retorts, carburizing boxes. Consult the Stanwood representative in your area today! Send for Catalog 16.
CARBURIZING BOXES
BASKETS
FIXTURES
TRAYS
QUENCH TANKS
RETORTS
Stanwood
FABRICATED METAL PRODUCTS
Corporation
4825 W. Cortland St.
Chicago 39, Ill.

PAGE

Stainless Steel

WIRE

ROUND

FLAT

OR

SHAPED

PAGE has been drawing stainless steel wire since the earliest development of stainless—for many manufacturers has become "Wire Headquarters."

Think of PAGE as a responsible source for wire—stainless steel, high or low carbon steel. Whatever your problem involving wire...

Get in touch with Page!

ACCO

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Pittsburgh, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

Large inventories built up at mills early in the year will last even longer than had been anticipated, and one large consumer with considerable stocks indicated it would need to make no purchases of open hearth scrap during July and August. This consumer is hoping the rate of operations will continue high enough this month that scrap received on prior commitments can be used upon arrival, thus avoiding handling costs that would be incurred through stockpiling.

Little interest is shown in foundry grades.

Despite the weakened market, prices have not fallen low enough to encourage dealers to stockpile scrap.

Buffalo—Scrap prices continued to skid last week. Weakness dominated the market as buyers were scarce. An additional 50 cents was added to the price setback, but at least one leading seller expressed a willingness to do business at figures about $1 below quoted ranges. No sales were reported and prices were generally nominal, principally because buyers refused to nibble at dealers' offering prices. No. 2 heavy melting steel is quoted at $17.50-$18. Dealers report they are accepting material at their yards at $10 to $12 a gross ton. The cast market was under additional pressure as dealers reported accepting virtually all material at the $10-$12 range.

Cincinnati—Quotations of iron and steel scrap sagged still further in a market afflicted by desultory demand and some rather heavy offerings. Dealers show no disposition to pile material, releasing tonnages whenever demand appears. All grades were affected by the markdown. Foundries, in the doldrums, need little material and buy principally by the truckload just to fill immediate requirements. Mills show little interest in purchasing, and some are entirely out of the market.

Chicago—The main difference between the present scrap situation and that of the early 1930s is one of degree. In fact, at that time, some scrap was being laid down, whereas today very little piling occurs. With the market almost completely lacking in activity, prices last week appeared to be slated for another tumble, although traders generally were holding on to the latest sales prices as their offering prices.

Birmingham—Scrap remains in the doldrums. Heavy melting continues to be quoted last week at $18 but that price, along with practically every other quotation, is entirely nominal. The district's largest buyer is not currently in the market.

St. Louis—A handful of June renewal orders for No. 2 heavy melting steel has established that price here at $17-$18, about $2 below the early May level. Volume of first-of-the-month orders was somewhat lower, however, since one major mill, which bought in May, has announced it won't purchase again before July. A small tonnage of charging box and heavy breakable cast and rerolling rails also has been contracted for. In other items, prices are merely quoted as "nominal," as they have been for two months. Railroad scrap is coming out a bit better, due to increasing deliveries of replacement steel, but otherwise shipments are exceedingly slow. No. 2 melting steel is now below the OPA level, considering freight costs, and dealers can't afford to reach out far for supplies. No. 2 now has to approach the former No. 1 quality or it will not be accepted. No. 1 also is within $1 of No. 2, since one of the biggest No. 1 consumers has been out of the market six months and another two months.

Foundry scrap is continuously pressed down by the fact many foundries are consuming less than 25 per cent of their tonnage of a year ago. Most sellers report second quarter bookings are not what they had hoped for and the outlook for the third is still worse. Hence, they are trimming inventories severely and scrap dealers now predict no pickup before September.

Dallas—Scrap prices continue nominal in this area, with practically no shipments being reported by brokers and yards. About the only market for scrap in this area has been Sheffield Steel Corp.'s Houston blast furnace which charges almost wholly with scrap, and this outlet dried up temporarily as of June 25. Sheffield has suspended buying, having apparently replenished supplies, though continuing furnace and finishing operations at the usual rate. Sheffield has been paying $17 a gross ton, f.o.b. shipping point.

Los Angeles—Scrap movement is almost at a standstill, with prices unchanged. Mill buyers continue to take little domestic material, in the face of declining production and substantial receipts of foreign scrap. Kaiser's Fontana plant has received a 9000-ton shipment of Jap guns.

San Francisco — Leading West Coast steel producers let June 1 pass without posting lower prices for scrap. At the beginning of the two preceding months, prices were cut to the present low level. Mills report they are still buying only small quantities. Scrap dealers say collections are poor and little scrap is moving in the domestic market.

Seattle—Steel scrap remains steady at $17 for No. 1 and No. 2 heavy melting, other grades in proportion. Receipts are not unusually heavy as some resistance is being offered to the lower price scale. Bethlehem Pacific Coast Steel Corp. will have a cargo of 8000 tons from the Philippines delivered here about June 15. Inventories are about the same.

Foundry operations are about 60 per cent in this area. Supplies of cast iron scrap and pig iron are ample. The former is quoted at $23 for the best grade, stove plate $18.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 136

Pittsburgh—Dearth of new buying of Connellsville beehive furnace coke has forced a further recession in prices of 50 cents to range of $13-$15. Additional oven foundry coke supply has been made available from local sources in recent months. Despite substantial decline in new demand, the price range of $16-$16.50 continues to hold on Connellsville beehive foundry coke.

Warehouse . . .

Warehouse Prices, Page 137

Philadelphia—Jobber prices are undergoing further adjustment. Reflecting an easier situation in mill prices, they have reduced plates slightly to 5.50c, city, and 5.35c country. Although there have been no changes in mill prices on floor plates, jobbers nevertheless have dropped their prices 4 cents per hundred pounds to 6.70c, city, and 6.55c, country. Cold-drawn bar prices are becoming increasingly unsettled, although a bit difficult to gage at the moment.

Hot-rolled strip out of local warehouse has been reduced 5 cents per hundred pounds to 5.55c, city, and 5.40c, country. No. 10 galvanized sheets at 6.83c, city, and 6.68c, country, are expected to be revised shortly as a result of the latest drop in zinc to 10 cents East St. Louis.

Meanwhile, jobbing demand continues to ease, with distributors looking for June to be the slowest month so far this year.

Pittsburgh — United States Steel Supply Co. has reduced hot-rolled and cold-finished alloy bar warehouse price mark-up from 58 to 50 per cent, in line with action taken by other distributors throughout the country. Shipments from warehouse stocks continue to be adversely affected by effort of customers to hold new buying to a minimum. Many consumers anticipate downward adjustment in prices before fourth quarter, while inventories in other instances are still out of balance in relation to curtailed production schedules.

Cleveland—Price reductions on several products, such as cold-finished carbon bars and hot-rolled alloy bars, has not yet stimulated any additional business.

Demand for steel at warehouse levels is spotty, orders flowing in fairly well on some days but not on others. Apparently, this reflects the close-to-vest buying policy under which many metalworking plants are buying materials for a job only after the order for that job has been received.

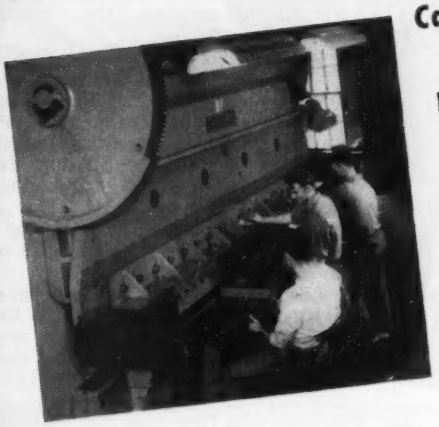
With summer vacations approaching, and the majority of Cleveland plant vacation schedules now call for a full two weeks, the prospects are that business at the warehouse level may subside further.

Cincinnati — Sales of warehouse steel were somewhat better last week than in the preceding week when a holiday interrupted considerable production. Shops announcing vacation plans for June and July are more numerous than usual, leading to belief by some jobbers that volume in ensuing weeks may show a drooping tendency.

Chicago — Demand-supply conditions between warehouses vary widely in this locality, but the major operators, while noting a marked contraction in demand all along the line, are still unable to promptly fill all orders. Galvanized sheets in the lighter gages are extremely scarce, while carbon sheets, both hot and cold-rolled, have eased but are still not freely available.

Galvanized prices were lowered $2

Low cost fabricated parts thru progressive forming . . .



Call 9-3356, YOUNGSTOWN, OHIO

for . . . METAL STAMPINGS
PRODUCTION TOOLS and FIXTURES
WELDED ASSEMBLIES

• Economical, High Speed Production of parts from Coil or Sheets by Roll and Hitch Feeds or Progressive Operation on Wide Bed Press Brakes.

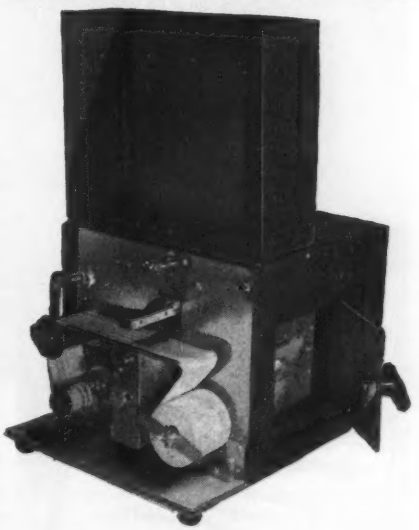
Submit Your Samples or Prints for Prompt Estimates

METAL Industries INCORPORATED
P O BOX 945 YOUNGSTOWN, OHIO

DIES and FIXTURES . CONTRACT STAMPINGS and ASSEMBLIES

A RECORDING MECHANICAL COUNTER

That Meets All Industrial Requirements



Operates on the output of a photo-electric cell, limit switch or any similar device. Records production against time and maintains a permanent record on a 2¼" tape. Automatically resets to zero every hour.

Here is a step in production counting that permits a complete analysis of efficiency in terms of hours or minutes instead of shifts, days or weeks. The reset feature eliminates much computation. It simplifies the entire task of studying production flow and determining how to maintain a high production level.

WRITE FOR BULLETIN B.

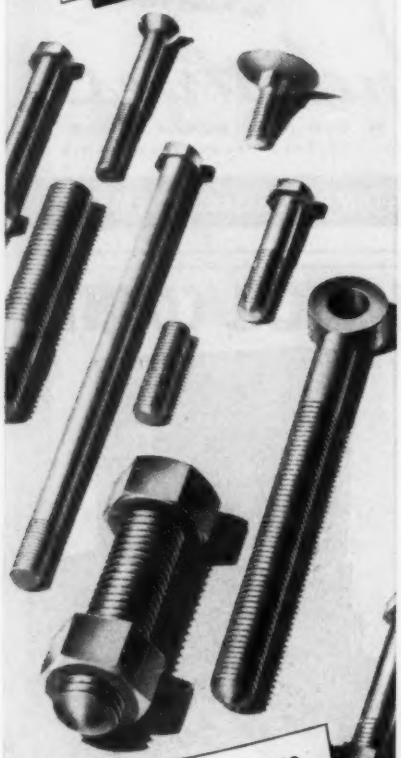
STREETER-AMET COMPANY

Automatic Weight Recorders & Scales
HIGH SPEED COUNTERS SINCE 1888
4103 RAVENSWOOD AVENUE, CHICAGO 13, ILL.

STREETER-AMET

Brass • Bronze
Stainless • Monel
Alloy Steels
BOLTS NUTS
STUDS

Here's a full line of bolts, nuts and studs in all types of metals. Accurately threaded to assure a uniform Class 3 Fit, Pawtucket products are made in standard dimensions or to your specifications.



BETTER BOLTS SINCE 1882
Use Headed and Threaded Fasteners for Economy and Reliability

PAWTUCKET
"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street · Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

a ton early this month by distributors in recognition of the zinc price drop, and the ¾-cent decline in zinc last week remained to be considered by warehouse price men at press time, although a further reduction in sheet prices seemed in prospect.

Birmingham — Warehouse stocks are gradually improving. Demand is about as it was in May which, incidentally, showed some improvement over April. The consensus is that demand generally is "moderately good." Allocations are, on the whole, a "dead duck."

Dallas—Warehouses in this area have ample stocks of most items, though a few are just now catching up. Inventories are in good shape and supply for immediate needs is available. Prices are holding steady, though the market is growing increasingly competitive. No price breaks are expected pending the outcome of steel and coal workers negotiations on contracts.

Los Angeles—Although jobber activity is off an average of 40 per cent from the level of six months ago, warehousemen report a slightly firmer undertone has developed in customer requirements. This is attributed, in part at least, to the likelihood that surplus inventory offerings have been pretty well soaked up. Warehouse stocks generally are in satisfactory balance, with sheet, plate, bars and pipe in good supply, and galvanized easing.

San Francisco — Jobbers' volume continues in the doldrums. Demand from consumers, strictly on a hand-to-mouth basis, is 35 to 40 per cent below a year ago, with no pick-up expected before autumn at the earliest.

Seattle—Jobbing houses report a steady turnover since Apr. 1, averaging about 15 per cent below 1948 levels but much above prewar. Mills are now soliciting business and wholesalers expect to have complete stocks by Aug. 1. Several interests, finding themselves overloaded, are dumping sheets and large shapes, causing a confused situation. Jobbers have in some cases canceled mill orders. Price structures are unchanged.

Iron Ore . . .

Iron Ore Prices, Page 136

Cleveland—Shipments of Lake Superior iron ore from upper lake ports amounted to 11,655,668 tons during May, an increase of 46,301 tons over the amount shipped in May of last year, according to the Lake Superior Iron Ore Association, this city. The cumulative total for the season to June 1 came to 21,023,247 tons, an increase of 1,736,699 tons or 9 per cent over the like 1948 period.

May Steel Output Declines

New York—Steel ingot production in May amounted to 7,683,428 net tons, or 94.1 per cent of capacity, second highest tonnage ever produced in that month, the American Iron & Steel Institute reports. April output totaled 7,785,276 net tons. The industry's output in the first five months of the year totaled 39,520,850 net tons.

Competition Keener in West

Seattle—Adjustments incident to transition from a sellers' to a buyers' market are being made in this area as conditions arise. Cancellation of considerable steel tonnage is reported and producers find themselves meeting a highly competitive situation.

Canada . . .

Toronto, Ont.—Primary iron and steel shapes produced in Canada during February total 300,916 net tons compared with 321,337 tons in January and 281,052 tons in February, 1948. Production for February this year included 290,851 tons of carbon steel shapes and 10,065 tons of alloy steel shapes.

Shipments of primary iron and steel shapes for sale in February totaled 216,862 net tons of which 207,868 tons were carbon and 8994 tons alloy steel shapes; January shipments amounted to 233,548 tons of which 224,910 tons were carbon and 8638 tons alloy steel shapes; February, 1948, shipments totaled 213,779 tons of which 191,640 tons were carbon and 12,149 alloy steel shapes.

February shipments included 10,507 tons of semifinished shapes; 10,879 tons of structurals; 10,084 tons of plates; 26,697 tons of rails; 7307 tons of tie plate and track material; 46,186 tons of hot-rolled bars; 14,932 tons of pipe and tubes; 26,930 tons of wire rods; 17,920 tons of black sheets; 8038 tons of galvanized sheets; 9656 tons of castings; 3837 tons of miscellaneous hot-rolled products and 15,889 tons of all other products.

Of shipments for sale in February, 48,509 tons went directly to railways and railway car shops; 11,842 tons to pressing, forming and stamping plants; 31,515 tons to merchant trade products; 26,056 tons to building construction; 14,511 tons to the containers industry; 8083 tons to agricultural equipment; 10,740 tons to the automotive industry; 10,246 tons to machinery plants; 2344 tons to shipbuilding; 6673 tons to mining, lumbering, etc.; and 2444 tons to miscellaneous industries. Wholesalers and warehousing accounted for 27,026 tons and exports for 16,873 tons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

800 tons, state turnpike bridge, Swatara creek, Pennsylvania, to Harris Structural Steel Co., New York.

750 tons, Du Pont plant, Bloomington, Tex., to Bethlehem Fabricators Inc., Bethlehem, Pa.

570 tons, St. Elizabeth parochial school, New York, to Schacht Steel Construction Co., Inc., that city.

420 tons, Yeshiva Jewish school, Flatbush, Brooklyn, N. Y., to Schacht Steel Construction Co. Inc., New York.

222 tons, state highway bridge, sec. 34-2-1-SF, Danville, Vermilion county, Ill., to Milwaukee Bridge Co., Milwaukee.

221 tons, state highway bridge, sec. 117-1-SF, Litchfield, Montgomery county, Ill., to Milwaukeee Bridge Co., Milwaukee.

221 tons, bridge, Harlan county, Nebr., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

200 tons, vehicle storage building, Camp

Douglas, Wis., for National Guard, to Milwaukee Bridge Co., Milwaukee.

180 tons, state highway bridge, proj. ERF-4-12, Warren county, Iowa, to Pitttsburgh-Des Moines Steel Co., Pittsburgh.

174 tons, state highway bridge, sec. 1F, Carmi, White county, Ill., to Milwaukee Bridge Co., Milwaukee.

154 tons, state highway bridge, Proj. F 67-9-, Hamilton county, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

139 tons, state highway bridge, Proj. F942-1, Bremer county, Iowa, to Clinton Bridge Works for fabrication by Allied Structural Steel Co., Clinton, Iowa.

135 tons, addition to Seattle warehouse A. M. Castle & Co., to Leckenby Structural Steel Co., Seattle.

126 tons, hangars, Airport, Madison, Wis., to International Steel Co., Evansville, Ind.

100 tons, Frigid Fluid Co., Building, Skokie, Ill., to Wendnagel & Co., Chicago.

STRUCTURAL STEEL PENDING

5000 tons, Senate office building, Washington; bids June 22.

4100 tons, state viaduct, Bronx River Parkway, New York; bids June 22.

3000 tons, superstructure, Manasquan river bridge, between Brielle and Point Pleasant Beach, Monmouth and Ocean counties, New Jersey; bids June 30. Also required are 270 tons of reinforcing bars, 57 tons of trunions and bearings, and 55 tons of machinery.

2400 tons, steel arch, three girder span bridge, Annisquam river, Gloucester, Mass.; bids June 21, Department of Public Works, Boston.

1300 tons, Public School No. 240, New York; previously noted as involving 1000 tons, pending.

1500 tons, junior high school, Brooklyn, N. Y.; bids closed June 10.

700 tons, state bridge, Bronx River Parkway, New York; bids June 22.

670 tons, Public school No. 177, New York; pending.

600 tons, additions, General Hospital, Lancaster, Pa.; bids June 28.

350 tons, Wanamaker store, Wilmington, Del.; pending.

300 tons, catapult, Navy Yard, Philadelphia; bids June 17.

250 tons, school, Somerville, N. J.; bids June 21.

250 tons, state bridge, Lincoln, Me.

200 tons, also 75 tons reinforcing, Emerson street viaduct, Seattle; Henrik, Valle Construction Co., low to Port of Seattle, $168,533.

130 tons, extension, Waldron Academy, Merion, Pa.; pending.

105 tons sheet piling, Howard street elevated, Chicago Transit authority; Kenny Construction Co., Chicago, low on general contract.

Unstated tonnage, Naval aeronautical turbine laboratory, Bureau of Yards and Docks, Trenton, N. J.; bids June 30.

Unstated, 1297 foot, Public Roads Administration viaduct type bridge, Coeur d'Alene, Idaho; bid date not announced.

Unstated, stop logs and derricks, McNary dam; bids to U. S. Engineer, Walla Walla, Wash., July 6.

Unstated, elevator, transfer car, etc. for Canyon Ferry dam project; bids to Bureau of Reclamation, Denver, June 21.

Unstated, substation and switchyard for Burbank pumping plant; bids to Bureau of Reclamation, Coulee dam, Wash., June 21.

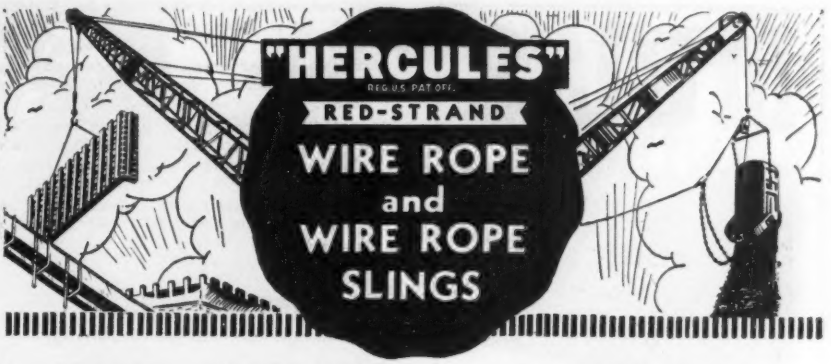
Unstated, nine steel structures Naselle substation; bids to Bonneville Power Administration., Portland, Oreg., June 28.

Unstated, addition, South Side Hospital, Bay Shore, Long Island, N. Y.

Unstated, various installations in Alaska for U. S. Army; bids in to Birch, Johnson & Lytle, Seattle.

Unstated, steel frame terminals for Consolidated Freightways Inc., Seattle; plans out June 7.

Unstated, Winchester wasteway and bridge,



SAFE—DEPENDABLE—ECONOMICAL

"HERCULES" (Red-Strand) Wire Rope and Wire Rope Slings have proved their fitness by the acid test of actual performance. There is a right type for any purpose. Our Engineering Department will gladly help you select the correct rope or sling for your particular needs.

We Invite Your Inquiries

PREFORMED

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

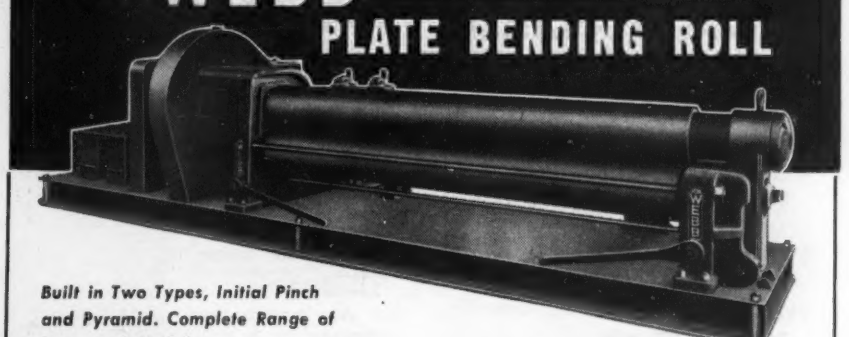
ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

NEW YORK 6 • CHICAGO 7 • HOUSTON 3 • DENVER 2
LOS ANGELES 21 • SAN FRANCISCO 7 • PORTLAND 9 • SEATTLE 4

DESIGNED and BUILT
TO DO THE JOB

THE WEBB
PLATE BENDING ROLL



Built in Two Types, Initial Pinch and Pyramid. Complete Range of Sizes and Models.

Prompt Delivery on Standard Sizes

Webb Plate Bending Rolls are designed and built for the forming of cylindrical shapes from rolled steel plate with greater speed and accuracy for high quantity production.

All Webb Rolls are backed by continuous progress in the development of industrial machinery since 1881.

Write for catalog

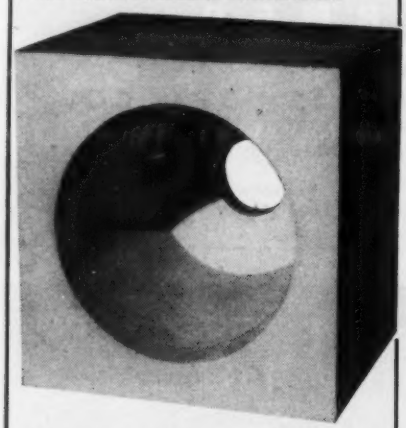
MANUFACTURERS OF PLATE ROLLS, COMBINATION PUNCH & SHEARS
Industrial Weighing Equipment

THE WEBB CORP.
WEBB CITY, MO.

MUL-8

A quality Mullite Refractory

Mul-8 contains a high percentage of Crystalline Mullite. Crystalline content has long been recognized as a controlling factor in the performance of mullite refractories.



BURNER BLOCKS and other shapes made to your specifications. Compare these figures on a cost basis:

REHEAT TEST
4 hrs. @ 3000 F.—
Shrinkage 0.0%

REHEAT TEST
4 hrs. @ 3200 F.—
Shrinkage .2%

LOAD TEST
3 hrs. @ 2950 F.—
Deformation 3.9%

PYROMETRIC CONE
EQUIVALENT #38

Dependable Refractories

REMMEY

RICHARD C. REMMEY SON CO.
Philadelphia 37, Pennsylvania

Columbia Basin project; J. A. Terteling Sons Inc., Boise, Idaho, apparently low $1,088,792.

Unstated, tainter gates, bulkheads and trash racks for McNary dam; bids to U. S. Engineer, Walla Walla, Wash., June 23.

Unstated, bulkhead gates, lighting beam, etc. for Hungry Horse project, Montana; bids to Bureau of Reclamation, Denver, July 7, postponed from June 7; spec. No. 2663.

Unstated, materials for right transformer circuits, Coulee power plant; bids to Bureau of Reclamation, Denver, June 16; spec. No. 2686.

REINFORCING BARS . . .

REINFORCING BARS PLACED

500 tons, miscellaneous small projects, Alaska and Washington state, to Bethlehem Pacific Coast Steel Corp., Seattle.

500 tons, Blackstone Valley sewer section, Pawtucket, R. I., to Truscon Steel Co., Boston.

240 tons, agricultural science building, University of Idaho, to Bethlehem Pacific Coast Steel Corp., Seattle.

175 tons, highway and bridge, Danvers, Mass., to Truscon Steel Co., Boston.

REINFORCING BARS PENDING

1700 tons, tuberculosis hospital, Madison, Wis.; Gust K. Newberg Construction Co., Chicago, low on general contract.

475 tons, outlet sewer, contract 1, Chicago; Tully Construction Co., Chicago, low on general contract.

400 tons, Kostner sewer; bids taken June 9 by Chicago Public Works.

227 tons, gym and cafeteria building, Highland Park, Ill., high school; bids taken June 1.

208 tons, academic building and boiler house, Blue Island, Ill.; Joseph J. Duffy Co., Chicago, low on general contract.

200 tons, 12 story apartment building, Chicago; bids taken May 9 have been thrown out and project abandoned.

177 tons, Housing project Site 6, Chicago; George Sollitt Construction Co., Chicago, low on general contract.

125 tons, nurses home, Cook county, Illinois; E. H. Marhoefer Jr. Co., Chicago, low on general contract.

75 tons, Emerson street viaduct, Seattle; Hemrik Valle Construction Co., low to Port of Seattle.

Unstated, Admiral Way viaduct; bids to Seattle, June 15.

Unstated, state underpass, Livingston county, Montana; bids to Helena, June 9.

PLATES . . .

PLATES PLACED

900 tons, oil storage Army tanks at Whittier, Alaska, to Consolidated Western Steel Corp., Seattle; Morrison-Knudsen Co. general contract.

300 tons, water system installation, Chewelah, Wash., to Hydraulic Supply Mfg. Co., Seattle.

100 tons, wrought iron pipe for Bureau of Reclamation, to Hydraulic Supply Mfg. Co., Seattle.

PLATES PENDING

Unstated, 140,000 sq ft sheet steel piling, breakwater at Nome, Alaska; plans in preparation by Col. L. H. Hewitt, U. S. Engineer, Seattle.

Unstated, 2 million-gallon water storage tank; bids to Bureau of Reclamation, Coulee dam, Wash., June 28.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Chesapeake & Ohio, 140 diesel-electric switch engines, mainly of 1000-horsepower, with some 1500-horsepower, to the Electro-Motive Division of General Motors Corp., La Grange, Ill., and American Locomotive Co., Schenectady, N. Y.

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

EUREKA, CALIF.—Carl E. Gustafson, Fifth & H Sts., has awarded a $108,923 contract to Mercer Fraser Co., Second & Commercial Sts., for construction of sales and service building.

LYNWOOD, CALIF.—Pacific Iron & Steel Co., 11632 S. Alameda St., will build a $250,000 warehouse.

SAN LEANDRO, CALIF.—Lucky Stores Inc., 377 Second St., Oakland, Calif., has awarded a $1.5 million contract to MacDonald, Young & Nelson, 351 California St., San Francisco, for construction of a warehouse; L. H. Nishkian & B. L. Nishkian, 1045 Sansome St., San Francisco, engineer.

FLORIDA

JACKSONVILLE, FLA.—Pan-Atlantic Steamship Lines, Municipal Docks, will build a $150,000 warehouse on Talleyrand Ave., and St. Johns River.

IDAHO

MOSCOW, IDAHO—W. G. Clark, Seattle, has offered a low bid of $516,000 for construction of an agriculture science building, University of Idaho.

ILLINOIS

CHICAGO—Enjay Construction Co., 105 W. Madison St., will build a $179,000 plant, 8240 S. Stewart St.; L. P. Sumarkoff, 105 W. Madison St., architect.

CHICAGO—New York, Chicago & St. Louis Railroad, H. F. Whitmore, chief engineer, Terminal Tower, Cleveland, has awarded a $275,000 contract to E. J. Benes & Co., 922 Terminal Tower, for construction of an engine terminal building, 2225 E. 109th St.; R. C. Trumbell, Cleveland, architect.

CHICAGO—Chicago, Milwaukee, St. Paul & Pacific Railroad, R. J. Middleton, chief engineer, 516 W. Jackson St., has awarded a $225,000 contract to Ragner Benson Inc., 4744 W. Rice St., for construction of a terminal, 2859-81 W. Grand Ave.; K. E. Hornung, 516 W. Jackson St., architect.

EVANSTON, ILL.—Owner, c/o contractor, has awarded a $255,000 contract, Edwin F. Hartrich & Sons, 141 W. Jackson St., Chicago; Albert Eisemandr, 141 W. Jackson St., Chicago, architect.

WEST CHICAGO, ILL.—Northwestern Chemical Co., 410 N. Michigan St., has awarded a $500,000 contract to Ragner Benson Inc., 4744 W. Rice St., for construction of a plant; Victor L. Charn, 4744 W. Rice St., architect.

KANSAS

DEERFIELD, KANS. — Deerfield Petroleum Inc. will build a $100,000 plant.

MINNESOTA

ST. PAUL—DeLuxe Check Printers Inc., 2531 University Ave., has awarded a $264,000 contract to Steenberg Construction Co., W. 1268 First National Bank Bldg., for construction of a factory, Wheeler St. & University Ave.

MISSOURI

ST. LOUIS—Bemis Bros. Bag Co. will build a one-story addition to its factory.

MONTANA

HAVRE, MONT.—Haggerty-Messner Co., Bozeman, Mont., has been awarded a contract for municipal disposal plant, low bid $286,700. City has already purchased some equipment.

NORTH CAROLINA

CLINTON, N. C. — Lundy Packing Plant opened bids June 7 for a $150,000 packing

Steelmaster

New "FUTURA GRAY" Steel File Units

MATCH THEM
BUILD-UP YOUR OWN UNITS

IDEAL FOR
DEPARTMENTAL USE
STORE ROOMS
INTER-DEPARTMENTAL USE
STOCK DEPT.
PROGRESS DEPT.
WORKS DEPT.
SCHEDULE DEPT.
HOME USE

(A) 1600 — 2-drawer storage cabinet equipped with lock. 36½" H.—24" H.—16" D. 3 storage compartments. **$28.60**

(B) 1620 — 20-drawer storage unit — 36½" H. — 24" W. — 16" D. Dr. Dim. 8¾" W. — 3" H. — 15¾" D. Compartmented on 1" centers—12 separate compartments. **$49.50**

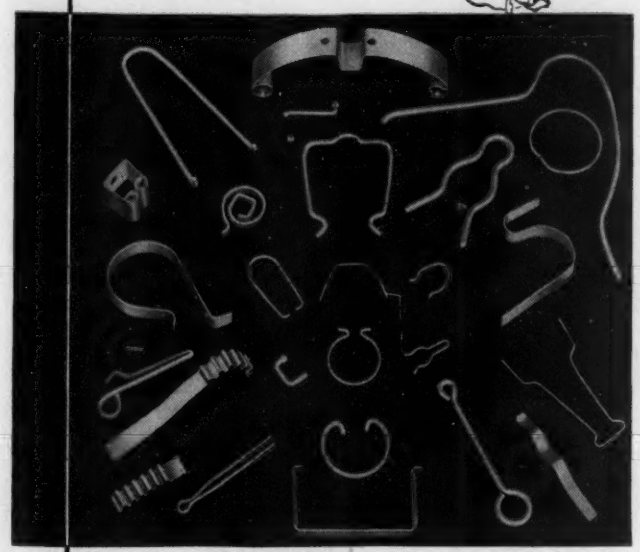
(C) 1610 — Combo 10-drawer and storage cabinet unit. Dr. Dim. 8¾" W.—3" H.—15¾" D. 3 storage compartments. 36½" H.—24" H.—16" D. **$39.50**

LOW PRICED!— VERIFIED VALUE!
(HIGHER ON WEST COAST)

ON SALE AT YOUR LOCAL STATIONER — OFFICE FURNITURE DEALER AND DEPARTMENT STORES. WRITE FOR CATALOG DEPT. ME

Art Steel Sales Corp.
170 W. 233rd ST. • N. Y. 63, N. Y.

Wire Forms



HUBBARD

Produced in various shapes to meet customer's particular problems. Heat treating, spot welding, other facilities. M. D. Hubbard Spring Company, 425 Central Avenue, Pontiac 12, Mich.

H U B B A R D
SPRINGS • STAMPINGS • WIRE FORMS • WASHERS • COTTERS

METAL PROTECTING CHEMICALS — ACP PROCESSES — SURFACE TREATING CHEMICALS

"Deoxidine"® —removes rust, oil, grease and other surface soil.

"Duridine"®
"Granodine"®
"Lithoform"® —provide a lasting paint bond and a durably finished surface.

"Peroline"® —prevents rust during storage and transit.

"Rodine"® —inhibits pickling acids and improves pickling operations.

"Alodine"® —protects aluminum surfaces from corrosion and forms a durable paint bond.

Don't let unprotected metal or a poor paint bond spoil your finished product. Write or call us (Ambler 0486) for full information on your metal-working problem; and the chemicals listed above.

Pioneering Research and Development Since 1914

AMERICAN CHEMICAL PAINT CO.
AMBLER, PA.

Manufacturers of Metallurgical, Agricultural & Pharmaceutical Chemicals

plant; plans deposit $25 for general; $15 for mechanical; F. Carter Williams, 133 Fayetteville St., Raleigh, N. C., architect.

OHIO

CLEVELAND—Austin Co., 16112 Euclid Ave., has been awarded the contract for construction of the Diamond Power Specialty Corp.'s plant and office buildings off U. S. Route 22, two miles east of Lancaster; cost will be between $1.5 and $2 million.

CLEVELAND—United Motors Service, division of General Motors Corp., General Motors Bldg., Detroit, has awarded a $335,000 contract to Sam W. Emerson Co., 1836 Euclid Ave., for construction of a warehouse, W. 110th St. at Lorain Ave.

MANSFIELD, O.—Mansfield News-Journal, S. A. Horvitz, publisher, 24 W. Fourth St., has asked bids during June for a $500,000 plant; Charles W. Conklin, Farmers Bank Bldg., architect; Vincent Eaton, Caxton Bldg., Cleveland, engineer; Paul C. Mehnert, 2232 Cummington Rd., Cleveland, electrical engineer.

MANTUA, O.—Portage Bituminous Co., 666 Home St., Akron, will move its quarters to Mantua, and will spend around $150,000 for buildings and equipment.

WARREN, O.—Griswold Co., department store, will build a new warehouse to replace one destroyed by a $125,000 to $200,000 fire on May 28; location not decided.

WILLOUGHBY, O.—Fire swept through the Barium & Chemicals Co. Inc. plant on Vine St., May 24. Amount of damage was not estimated.

YOUNGSTOWN—General Fireproofing Co. has awarded a $175,000 contract to Joseph Bucheit & Sons Co. for addition to its plant.

OKLAHOMA

ALEX, OKLA.—Magnolia Petroleum Co., Magnolia Bldg., Dallas, has awarded a $375,000 contract to Construction Service Co., M & M Bldg., Houston, for construction of a plant.

CUSHING, OKLA.—Deep Rock Oil Co., Atlas Bldg., Tulsa, Okla., has awarded a $2 million contract to Jones & Laughlin Supply Co., 108 N. Trenton St., Tulsa, for construction of a plant; Universal Oil Products, 310 S. Michigan Ave., Chicago, engineer.

PENNSYLVANIA

NEW CASTLE, PA.—New Castle Packing Co. will build a $250,000 packing plant on Mahoning Ave.

READING, PA.—International Harvester Co., N. Fifth St. Highway, has awarded a $175,000 contract to C. H. Schlegel & Son Inc., 415 N. Sixth St., for construction of a motor truck branch.

SOUTH CAROLINA

NORTH CHARLESTON, S. C.—West Virginia Pulp & Paper Co. has announced a $4.5 million improvement program.

TENNESSEE

MEMPHIS, TENN. — Dixie Greyhound Bus Lines, c/o Furbringer & Ehrman, architect, Planters National Bank & Trust Co. Bldg., will open bids June 22 on a proposed $500,000 bus terminal.

NASHVILLE, TENN.—Nashville Electric Service, 605 Church St., will build a $350,000 substation, Johnston Ave.

TEXAS

BEAUMONT, TEX.—Texas Eastern Transmission Corp., Commerce Bldg., Houston, will build a $350,000 compressor station; contract awarded to Brown & Root Inc., Box 3, Houston.

CORPUS CHRISTI, TEX.—Louis E. Meekins & Associates, 1101 N. E. 23rd St., Fort Worth, Tex., will open bids for a $1,750,000 grain elevator; Felicide Engineering Co., 53 W. Jackson St., Chicago, engineer.

EL PASO, TEX.—El Paso Electric Co., Martin Bldg., will build a $250,000 power plant unit.

FREEPORT, TEX.—Dow Chemical Co. has acquired government-owned magnesium plant; plan rehabilitation of plant to cost $212,000, and to keep it in "ever-ready" production condition, estimated cost at $477,000.

HOUSTON—Katy Park Industrial Development Corp., c/o Tom C. Mabry, vice president, M-K-T Railway, 1811 Ruiz St., has asked bids for a $5 million warehousing project, N. Main St. opposite M & M Bldg.; Wyatt C. Hedrick, 5201 Fannin St., engineer and architect.

HOUSTON—Houston Lighting & Power Co., 1016 Walker St., will build a $275,000 substation off Walker St.; electric shop, storage and display building on Washington Ave., for $300,000; Carl G. Elliott Jr., 4511 Kayle St., architect on latter project.

SPEARMAN, TEX. — Phillips Petroleum Co., Bartlesville, Okla., will build a $400,000 booster station (on gas pipeline).

UTAH

SALT LAKE CITY, UTAH—Mountain Fuel & Supply Co., 36 South State St., has awarded a $1,750,000 contract to Enoch Smith Sons Co., Beck St., for a natural gas supply line extending from Coalville to Salt Lake City.

SALT LAKE CITY, UTAH—Chicago Bridge & Iron Co., First Security Bank Bldg., has awarded a $125,000 contract to Olson Construction Co., 1549 E. Second West St., for construction of a plant.

VIRGINIA

RICHMOND, VA.—Martin-Chevrolet Sales Co., Cowardin Ave. & Hull St., has awarded a $239,750 contract to James Fox & Sons, 2501 E. Franklin St., for construction of a sales and service building; H. Carl Messerschmidt, 1124 Mutual Bldg., Ninth & Main Sts., architect.

WASHINGTON

SEATTLE—Pacific Wire Works, K. H. Kaye, president, announces construction of a plant addition.

ALASKA

ANCHORAGE, ALASKA—Alaska Railroad has called bids June 13 for installation of diesel generating plant at Fairbanks for central heating and power.

CANADA

TORONTO, ONT.—Dominion Corrugated Paper Co. Ltd. will build a $100,000 factory; W. J. McBain, 2559 W. Bloor St., architect.

PRICES OF LEADING FERROALLOY PRODUCTS

(*Continued from Page 137*)

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35. F.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract, $160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%). Contract, $175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

VANADIUM ALLOYS

Ferrovanadium: Open-Hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.), $3.10.

Grainal: Vanadium Grainal No. 1, 93; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots, $1.20 per lb of contained V_2O_5, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Contract, 10,000 lb W. or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more. 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $6.25 per lb contained B, f.o.b. Philo, O., freight not exceeding St. Louis rate alowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Contract, ton lot, 2" x D, $2.90 per lb of contained Cb, less ton $2.95. Delivered. Spot, add 25c.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Carload, 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, M 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.25c, less ton 18.5. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.00c per lb or alloy; ton lots 18.00c; les ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 11c, ton lots 11.25c, smaller lots 11.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base): Gross tons per carload, f.o.b. sellers' works, Mt. Pleasant, or Siglo, Tenn.; $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.ob. Langeloth and Washington, Pa., furnace, any quantity $1.10.

Technical Molybdic-Oxide: Per lb, contained Mo., f.ob. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.